SMALL ESTABLISHMENTS SERVICE

MEDICAL OFFICES AND CLINICS

INPUT

ABOUT INPUT

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INPUT provides planning information, analysis, and recommendations to managers and executives in the information processing industries. Through market research, technology forecasting, and competitive analysis, INPUT supports client management in making informed decisions. Continuing services are provided to users and vendors of computers, communications, and office products and services.

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AN INDUSTRY SECTOR REPORT
SMALL ESTABLISHMENT SERVICE

MEDICAL OFFICES AND CLINICS

MAY 1979

MEDICAL OFFICES AND CLINICS

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MEDICAL OFFICES AND CLINICS

LIST OF EXHIBITS

I INTRODUCTION

I INTRODUCTION

- This report is produced by INPUT as part of the Small Establishment Service (SES). The report covers the selection and use of information processing products, services, and supplies by small establishments in the physicians' offices and medical clinics services industry. These products and services include:

  - Computer equipment.

  - Computer services.

  - Office equipment.

  - Communications equipment.

  - Communications services.

  - Supplies.

- Both multi-practitioners offices and medical groups or clinics were included and reported on in this study.

- The industry which is the focus of this study is that of the Medical Practitioner. In particular it is SIC-801, Offices of Physicians, which is part of the Health Services group of industries contained in SIC-80.

- Medical groups were analyzed and reported on by three size categories:

  - Small (3-6 MDs).

  - Medium (7-19 MDs).

  - Large (20 or more MDs).

- This report emphasizes the present use of information processing products and services and the desire for increased automation by medical groups.

- The physicians' offices and medical clinics sector is of major importance because of its high level of expressed needs for information processing both in business and medical applications and its existing, very low level (less than 10%) of market penetration for computer equipment and services. Both a large volume of paperwork and a desire to further improve patient care are driving factors in the market.

- A bibliography of information sources is included in Appendix A.

- Research carried out for this report included a series of interviews conducted in March 1979 as specified in Appendix B.

  - Expenditure Methodology is shown in Appendix C.

  - Sample copies of the questionnaires are included in Appendix D.

  - Definitions of terminology used in the interviews and this report appear in Appendix E.

- Inquiries and comments on the information presented in this report are invited from clients.

II EXECUTIVE SUMMARY

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A. SCOPE AND KEY CONCLUSIONS

- There are a total of 75,694 physicians in the United States practicing in 10,167 medical groups of three or more. This group represents 35% of all non-federal physicians in this country who are engaged in patient care.

  - The group medical practice industry employed 235,000 persons and had gross revenues of $8.3 billion in 1976.

- INPUT estimates that the group medical practice industry spent $14.5 million in 1978 for computer equipment and services, as shown in Exhibit II-1.

  - This is only a 10% penetration into a potential market estimated at $145 million.

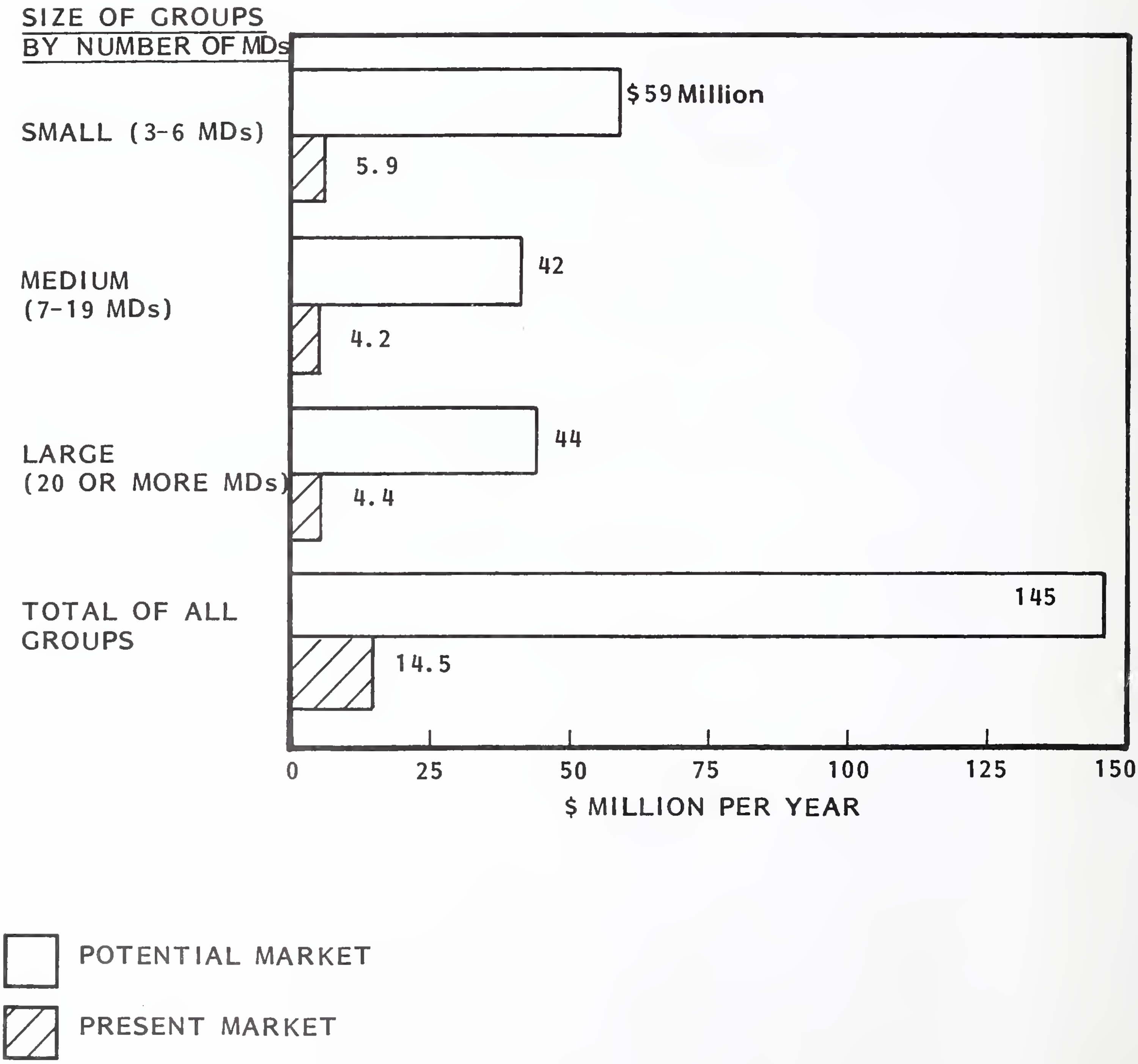
  - The market is evenly distributed between small, medium, and large sized groups.

- Fifty-six percent of establishments currently are using computer equipment or services.

EXHIBIT II-1

POTENTIAL COMPUTER EQUIPMENT AND SERVICES MARKET BY SIZE OF MEDICAL GROUP

(INCLUDES BOTH BUSINESS AND MEDICAL MARKETS)



- About one-quarter of the respondents stated that they have specific information processing needs that they expect to automate within the next two years.

- This is an unpenetrated market with a relatively widespread involvement and interest in computer automation. Physicians' offices and clinics have an ability to fund equipment and services and there are many essential non-automated functions, beginning with business applications and expanding into much more sophisticated medical applications.

  - The physicians' offices and clinics industry represents a good market for vendors of computer equipment and services.

- INPUT expects the computer equipment and services market to grow at an average annual rate of 24% per year (about 1.5 x that for the EDP industry as as a whole) and reach $42.5 million in 1983 because of the need for automation in an unpenetrated market.

- Use of text processing automation is minimal because the medical groups are generally small and by their nature do not generate large amounts of text or mail. There was interest (expressed) in word processing equipment by 20% of the large groups but installed equipment was only evident in a few special groups. This may be a specialized market in the future, but not at present.

- Photocopy equipment is used universally and accounts for a large annual expenditure by the industry. However, it is not expected to grow beyond rates established by demographics and inflation.

- The communication needs of the industry are entirely satisfied by telephone equipment. It also is not expected to grow beyond demographic and inflation rates. However, 35% of the respondents expressed an interest in interconnect equipment.

- In 1978 medical groups spent $12.8 million on office equipment, and $56.8 million on communications equipment and services.

B. PHYSICIANS' OFFICES AND CLINICS INDUSTRY SECTOR STRUCTURE

- On the average, each physician practicing in groups of three or more, produces an annual gross revenue of $110,000 and supports 2.1 additional persons, as shown in Exhibit II-2.

  - This leverage allows a group of 75,694 physicians to produce gross revenues of $8.3 billion per year in an industry employing 235,000 persons.

  - This represents 0.3% of the United States work force and 0.5% of the United States gross national product.

- There are 10,167 medical groups in the United States with three MDs or more. In this study they have been classified into three groups:

  - Small (3-6 MDs).

  - Medium (7-19 MDs).

  - Large (20 or more MDS).

- The manner in which the groups are distributed by size category is shown in Exhibit II-3.

  - The market for computer equipment and services is equally divided between size categories, but the number of groups varies widely. Seventy-six percent of the establishments are contained in the small group category; only 5% are in the large category.

EXHIBIT II- 2

ANNUAL REVENUE PRODUCED AND ADDITIONAL PERSONNEL SUPPORTED BY EACH PHYSICIAN - NATIONAL AVERAGE

PER MD

NET INCOME	EXPENSES	GROSS REVENUE	ADDITIONAL SUPPORT PERSONNEL
$65,000	$45,000	$110,000	2.1

EXHIBIT II- 3

PHYSICIANS OFFICES AND CLINICS
GROUPS OF THREE OR MORE
SHARING FACILITIES AND PERSONNEL
DISTRIBUTION BY SIZE

NUMBER OF MDs IN GROUP	NUMBER OF GROUPS	PERCENT OF GROUPS
SMALL (3-6)	7,722	76%
MEDIUM (7-19)	1,981	19
LARGE (20 OR MORE)	464	5
TOTAL	10,167	100%

- The market for communications equipment and services and office equipment is roughly equally divided between size categories, as is the number of MD's.

C. EQUIPMENT AND SERVICES MARKETS

- Medical offices and clinics have a considerable involvement and awareness of computer equipment and services. Present applications are limited almost entirely to business office services.

- Office equipment at this time is limited almost entirely to photocopiers. There is very little awareness of word processing and a potential need for it is limited to special groups, such as large outpatient clinics, radiology, pathology, and psychiatry.

- Communications equipment and service needs of the establishments are almost entirely satisfied by local telephone companies. However, 35% of respondents said that they would consider interconnect equipment.

- Fifty-six percent of medical offices and clinics, with three physicians or more, are presently using computer equipment and services, as shown in Exhibit II-4.

    - There are notable differences in the degree of use of computer equipment and services depending upon the size of the group. Only 48% of the small groups are presently involved, but 100% of the sample of large groups were using computer services.

    - The large establishments are almost all convinced of the need for computers or computer services, but this is not so among the small and medium establishments. A sizeable number, from 22% to 25% of small and medium groups, feel that they have no need for computers, a factor that must be contended with in this market. This stems from the fact

EXHIBIT II-4

PRESENT USERS OF COMPUTER EQUIPMENT AND SERVICES

SIZE OF GROUP BY NUMBER OF MDs	PERCENT OF USERS		
	INSTALLED EQUIPMENT	REMOTE SERVICE	EQUIPMENT AND SERVICE
SMALL (3-6 MDs)	45%	24%	48%
MEDIUM (7-19 MDs)	33	67	67
LARGE (20 OR MORE MDs)	14	100	100
TOTAL OF ALL GROUPS	38%	43%	56%

large groups found the expense and burden of manual processing of very large volumes of paperwork intolerable. They were forced to use data processing early. The small groups could handle the smaller volumes manually so they are moving into automation later.

- A general conclusion may be drawn concerning the use of computer equipment and computer services by the medical group practice industry, as follows:

  - A much larger percentage of small groups have installed computers than do large groups.

  - A much larger percentage of large groups are using remote computer services than do small groups.

- This anomaly had its beginnings in the mid sixties when computers were being heavily promoted with community hospitals. At that time cost effectiveness was questionable at best, there were many software problems, and EDP staffs were a problem to the establishments. Physicians were well aware of this and were very much inclined to hold off on automation in their own offices. As the volume of paperwork grew in the large offices, they were forced to automate, however, they chose to do so with computer services because of the problems which they saw with computer hardware.

D. APPLICATION NEEDS

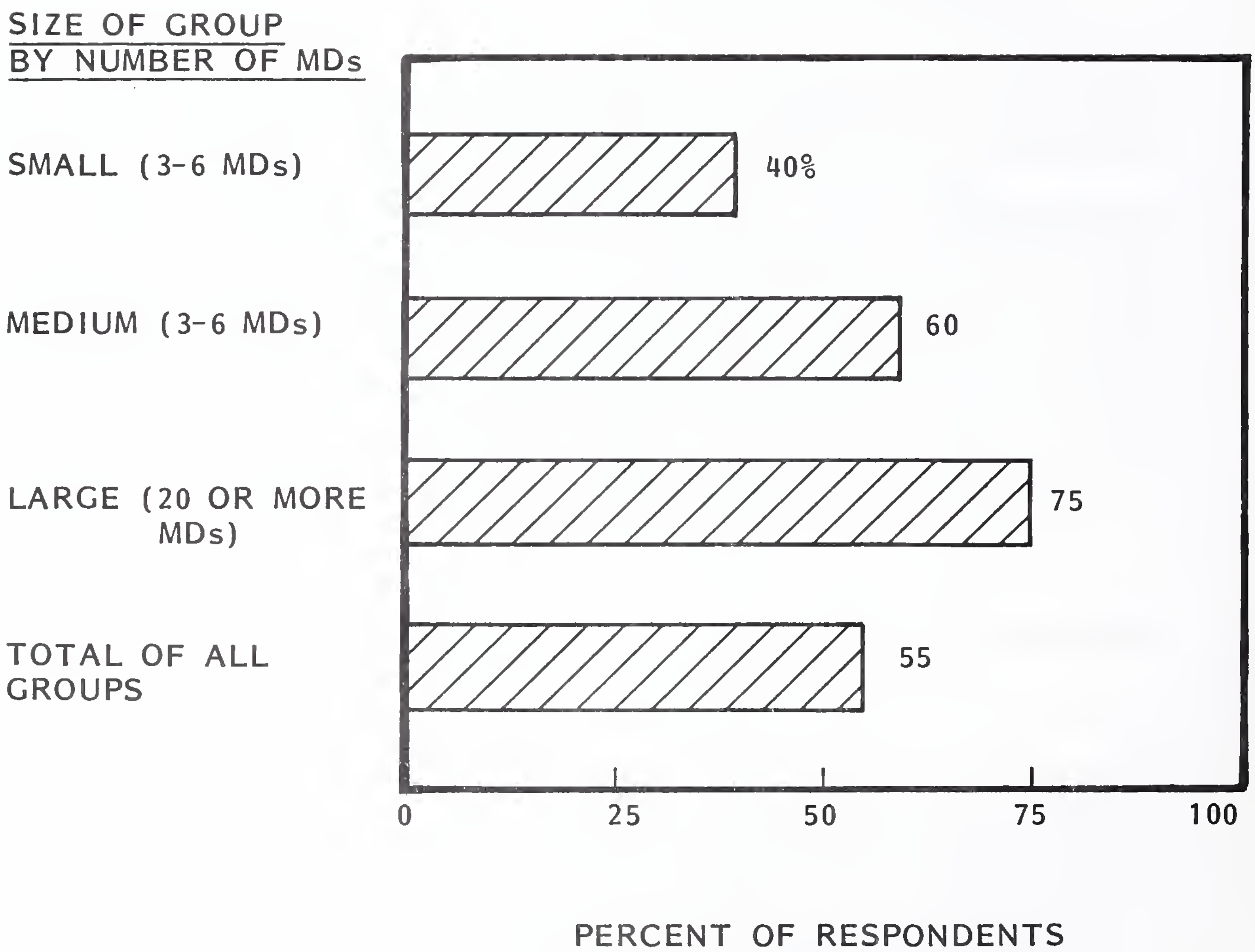
- Among the groups that are now using computer equipment or services, 55% of the major business functions are automated as shown in Exhibit II-5.

  - This varies from 40% with small users to 75% with large users.

- Considering that 56% of the groups are using computers, and that 55% of the major business functions are automated:

EXHIBIT II-5

MAJOR BUSINESS APPLICATIONS-
PERCENT AUTOMATED



- Overall, only 31% of the major business functions are now automated.

- The large users have the more ugent need to automate. They had to move first because of the size of the manual processing job. This is expected to be evident again in the automation of medical applications, with the large groups taking the lead.

- It is apparent that the use of computer equipment and services in physicians' offices and clinics will first be for automation of the large paper volume functions, such as patient billing. It will next move to automation of other business functions, such as payroll, and then to the much more sophisticated medical applications. A listing of applications is shown in Exhibit II-6.

- A model for this progression in automation can be found in the use of computer automation in hospitals (Described in "Computer Services Markets in Hospitals," INPUT Market Analysis Services Industry Report No. 15, October 1978) that preceded automation in physicians groups.

- The extension of automation of registration, medical records, and laboratory reporting in medical groups is only the beginning. It will take many years before networks will be developed, but a major extention of medical records will occur when physicians' offices are tied into hospital medical information systems. Such automation has the potential for changing the way physicians practice medicine and has market implications beyond the time scale and scope of this study.

E. MARKETING REQUIREMENTS

- End users of computer equipment and services automation in the physicians' offices and clinics industry are administrators/business managers and physicians; both participate in purchase decisions.

EXHIBIT II-6

APPLICATIONS FOR AUTOMATION

GROUP PRACTICE MANAGEMENT SYSTEM - BUSINESS APPLICATIONS PACKAGE

- PATIENT BILLING
- ACCOUNTS RECEIVABLE
- ACCOUNTS PAYABLE
- PAYROLL
- INSURANCE
- GENERAL LEDGER
- OTHER FINANCE
- ON-LINE INQUIRY
- TEXT EDITING

PATIENT MANAGEMENT - MEDICAL APPLICATIONS PACKAGE

- REGISTRATION AND SCHEDULING
- MEDICAL RECORDS STORAGE AND RETREIVAL
- LABORATORY REPORTING

FUTURE:

- ON-LINE TO HOSPITAL MEDICAL INFORMATION SYSTEM
- DRUG INTERACTION
- COMPUTER AIDED DIAGNOSIS

- Marketing efforts must appeal to professional interests and cost savings, not to selling technology.

- Physicians are approachable in their offices by respected professionals or executives.

- Direct mail with return reply cards can be used successfully when designed to meet professional and cost saving needs. Effectiveness is enhanced by using American Medical Association or State Medical Association mailing labels.

- Small outside seminars are also effective in reaching physicians.

● This is an unpenetrated and emerging market that is national in scope but regional in nature.

  - Local presence is essential. Demonstrate successful penetration in one area and then spread.

  - Reference selling is required and local references are best.

  - Groups become dependent on local marketing representatives for automation needs.

  - Marketing representatives must be "applications oriented."

  - Demonstated cost effectiveness is essential.

  - This market is more recession proof than most, people need physicians and physicians eventually get paid. It also is enhanced by imposed government red tape.

F. RECOMMENDATIONS

- Vendors with EDP products and services suitable for small establishments should direct their efforts towards physicians' offices and clinics with three or more physicians.

    - Computer equipment vendors should sell to all size groups but small groups install many more standalone systems for business applications than do large groups.

    - Computer service vendors should concentrate on large and medium sized groups. Even though they may have in-house installations, almost all of the large groups also use remote computer services.

- Vendors of text processing and communications equipment should concentrate upon large groups, and rapidly qualify prospects.

- Because the establishments do not think of, or understand the many applications beyond a simple business and financial system, vendors should aggressively "educate the users."

- Vendors of either computer equipment or services must first provide for a business and financial system, before moving to medical applications.

- Provision for upgrading the system to include patient handling and medical applications should be provided from the beginning.

    - Acceptance will be greatly enhanced among users of medical applications and displacement of existing equipment or services vendors avoided if the system can interface with any existing business system.

    - Vendors offering patient management and medical applications as well as business applications, and the option of interfacing with existing

business systems will differentiate themselves beyond the many who now offer only simple business services.

- Medical applications should be sold first to the confined market of the larger groups.

- Better patient care and cost effectiveness should both be stressed.

- Custom programming should be allowed to a reasonable extent. Some flexibility is required.

- In short, the marketing strategy should be to develop a customer base and then expand it.

  - Initial computer installations are invariably expanded to new applications.

  - Local reference selling expands the customer base.

III INDUSTRY STRUCTURE

III INDUSTRY STRUCTURE

A. FUNCTIONAL DESCRIPTION

- The industry which is the focus of this study is that of the Medical Practitioner. In particular, it is SIC-801, Offices of Physicians, which is part of the Health Services group of industries contained in SIC-80.

- Physicians' offices as a total group had 545,000 employees in 1976 (the latest year for which there are published data). This represents 0.8% of the United States work force.

- Physicans practicing in groups of three or more, hereafter referred to as a group medical practice, were the particular focus of this study.

  - The group medical practice industry employed 235,000 persons (including physicians) and had gross revenues of $8.3 billion in 1976.

  - This represents 0.3% of the United States work force and 0.5% of the United States gross national product.

o INPUT estimates that the group medical practice industry spent $14.5 million in 1978 on computer equipment and services (see Section VI - Equipment and Services Markets), including:

- EDP equipment.

- EDP services.

- The group medical pracice industry is comprised of small establishments. Ninety-eight percent of the establishments have less than 20 employees.

- Physicians in office practice are defined by the American Medical Association as those who spend a plurality of their time:

  - Devoted to patient care, and

  - Working for an organization (or self) other than a hospital

  in other words "office based."

- There were 294,730 non-federal physicans providing patient care in the United States in 1976. Of these 214,710 or 73% were office based. The others were hospital based (74% interns and residents). These figures, shown for selected years, are contained in Exhibit III-1. It is of interest to note that the total number of physicians grows slowly; 2.2% per year average rate. The growth in group practices is estimated to be of this order as well.

- There were 121,171 establishments (SIC-801) in 1976 that fit the AMA definition of "office based." They employed 544,763 persons, as shown in Exhibit III-2. However, a very large number of establishments with less than 19 employees (98% of the total) are solo practitioners or two MD offices. INPUT believes that the market for automation lies with the three MDs or more establishments.

- A group medical practice (as defined by the American Medical Association) is:

  - Three or more physicians formally organized to provide medical services through the joint use of equipment and personnel.

EXHIBIT III-1

NON-FEDERAL PHYSICIANS (M.D.) BY
TYPE OF PRACTICE
SELECTED YEARS, 1969 THROUGH 1976
(UNITED STATES)

YEAR	1969	1972	1976	
TOTAL PATIENT CARE	247,508	269,095	294,730	
OFFICE BASED	184,355	198,974	214,710	(1)
HOSPITAL BASED	63,153	70,121	80,020	

(1) AVERAGE ANNUAL GROWTH RATE = 2.2% FROM 1969-1976.

EXHIBIT III-2

PHYSICIANS OFFICES

(S.I.C. CODE-801)

DISTRIBUTION BY SIZE

SIZE BY NUMBER OF EMPLOYEES	NUMBER OF ESTABLISHMENTS	NUMBER OF EMPLOYEES
1-19	118,726	430,818
20-99	2,305	79,365
100-499	121	21,192
TOTAL	121,171	544,763

- A joint medical practice with income from the practice distributed in accordance with methods previously determined by members of the group.

- The specialties contained in group medical practices are varied. Classification of group practice are shown in Exhibit III-3. The largest group (54%) are the single specialty groups. Revenues vary considerably among the groups and generally correlate with degree of specialization. A single specialty group practice of orthopedic surgeons would be at the high end of the range and a pediatric group would be at the low end.

- There are 75,694 physicans in group medical practices of three or more MD groups. This represents 35% of the total office based group (SIC-801). Total annual revenues are $8.3 billion.

- These physicans practice in 10,167 establishments, only 8% of the total establishments. Of the 121,171 total establishments, 11,000 are solo practitioners or two MD offices and are not considered in this study. The high concentration of physicians (35%) practicing in a relatively small number of establishments (8%) makes it much easier to reach this market.

- Ninety-three percent of these groups are classified as medical groups or clinics. Seven percent are classified as multi-practitioners' offices

- Throughout this study physican groups have been classified by size, as shown in Exhibit III-4 and are refered to as:

  - Small (3-6 MDs)
  - Medium (7-20 MDs)
  - Large (20 or more MDs)

  Each of these three group classifications contain approximately the same number of total physicians (from 21,791 to 30,888), as shown in Exhibit III-4, which means approximately the same amount of total revenue. However, the

EXHIBIT III-3

CLASSIFICATION OF GROUP MEDICAL PRACTICES

AS A PERCENTAGE OF TOTAL PRACTICES

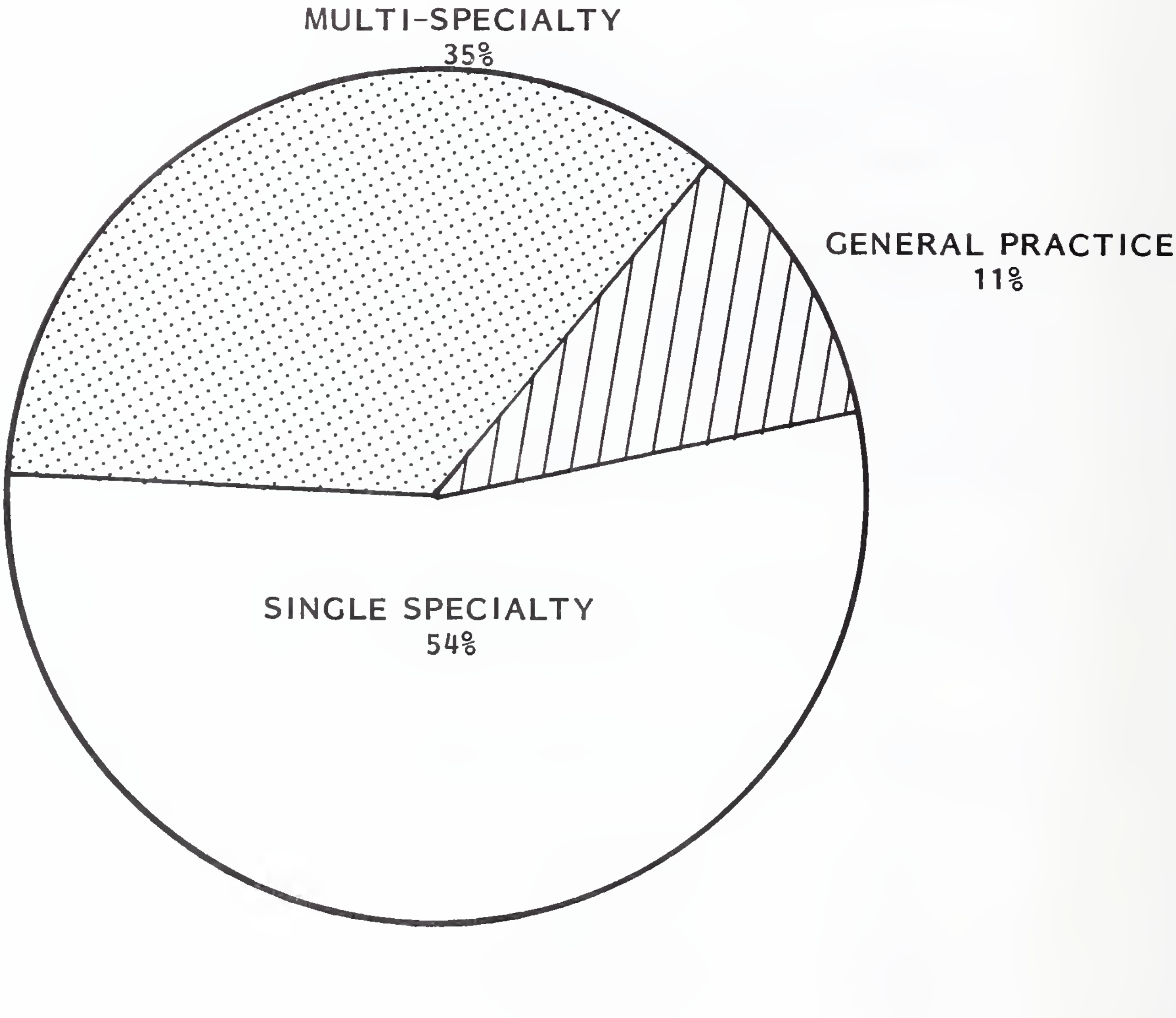


EXHIBIT III-4

PHYSICIANS OFFICES
(S.I.C. CODE-801)

GROUPS OF THREE OR MORE SHARING FACILITIES AND PERSONNEL DISTRIBUTION BY SIZE

NUMBER OF MDs IN GROUP	TOTAL NUMBER OF MDs	NUMBER OF GROUPS	PERCENT OF GROUPS
3-6 SMALL	30,888	7,722	76%
7-20 MEDIUM	21,791	1,981	19
20 OR MORE LARGE	23,015	464	5
TOTAL	75,694	10,167	100%
PERCENT OF TOTAL	35% (1)	8% (2)	-

NOTE: (1) PERCENT OF TOTAL (NON-FEDERAL) MDs-OFFICE BASED
(2) PERCENT OF TOTAL ESTABLISHMENTS

total number of establishments in each group classification varies a great deal. This distribution, with a great number of establishments in small groups and a relatively small number in large groups, has interesting marketing connotations, as will be discussed later.

- A further analysis of the market by these classifications is contained in Section VI - Equipment and Services Markets.

- The group medical practice industry with revenues of $8.3 billion is national in scope. Yet, each region of the country is distinct with respect to how medicine is practiced. New England, with the Harvard Medical School and Massachusetts General Hospital has a different "medical personality" from Texas, with the large Texas Medical Center. Reporting needs, degrees of conservatism, and interest in the automation of medical applications all vary from region to region. Although the opportunities for information processing are basicaly the same when approaching the market, this regional "personality" trait needs to be considered. A distribution of physicans' group practices by state is shown in Exhibit III-5. The largest concentration of establishments exist in the states of California, Florida, Illinois, Michigan, New York, Ohio, Pennsylvania, and Texas.

B. GROWTH HISTORY AND FORECAST

- Over the seven year period from 1969 to 1977, the number of office based private physicans grew 16.5%; a 2.2% per year average rate. This slow growth is expected to continue.

- The number of physican group practices with three or more MDs follows the same trend. Governmental pressures for cost containment are forcing hospitals to encourage hospital based physicans, who pay nothing for space and service, to establish their own offices and convert to a fee-for-service practice. However, their numbers are relatively small and what movement

EXHIBIT III-5

PHYSICIANS OFFICES (S.I.C. CODE-801)
GROUPS OF THREE OR MORE SHARING
FACILITIES AND PERSONNEL
DISTRIBUTION BY STATE

STATE	NUMBER OF SMALL ESTAB-LISHMENTS	PERCENT OF U.S. TOTAL	STATE	NUMBER OF SMALL ESTAB-LISHMENTS	PERCENT OF U.S. TOTAL
AL	171	1.7%	MT	33	0.3
AK	11	0.1	NE	72	0.7
AZ	127	1.3	NV	40	0.4
AR	93	0.9	NH	23	0.2
CA	1,123	11.1	NJ	325	3.2
CO	132	1.3	NM	102	1.0
CT	130	1.3	NY	623	6.1
DE	26	0.3	NC	225	2.2
DC	40	0.4	ND	22	0.2
FL	520	5.1	OH	463	4.6
GA	251	2.5	OK	121	1.2
HI	36	0.4	OR	125	1.2
ID	38	0.4	PA	448	4.4
IL	483	4.8	RI	28	0.3
IN	202	2.0	SC	116	1.1
IA	120	1.0	SD	24	0.2
KS	101	1.0	TN	200	2.0
KY	119	1.2	TX	515	5.1
LA	320	3.1	UT	50	0.5
ME	22	0.2	VT	12	0.1
MD	179	1.8	VA	220	2.1
MA	209	2.1	WA	165	1.6
MI	1,076	10.6	WV	50	0.5
MN	160	1.6	WI	167	1.6
MS	95	0.9	WY	17	0.2
MO	197	1.9			
TOTAL NUMBER OF SMALL ESTABLISHMENTS				10,167	100.0%

there is to establish new offices is almost entirely in the one to two MD offices.

- The growth for information processing automation in the group medical practice industry will come from expanded market penetration instead of industry growth. INPUT estimates that the growth in automation, equipment, and services, will be around 24% per year, because of the fact that the market is penetrated to such a small degree yet has a great interest in data processing, about 1.5 times the average growth rate of the total information processing industry.

IV USE OF INFORMATION PROCESSING AND COMMUNICATIONS EQUIPMENT AND SERVICES

IV USE OF INFORMATION PROCESSING AND COMMUNICATIONS EQUIPMENT AND SERVICES

A. HOW AUTOMATED IS THE INDUSTRY?

- Medical offices and clinics have considerable involvement and awareness in computer equipment and services, but present applications are limited almost entirely to business office functions.

- At this time office equipment is limited almost entirely to photocopiers. There is little awareness of word processing and a potential need for it is limited to special groups.

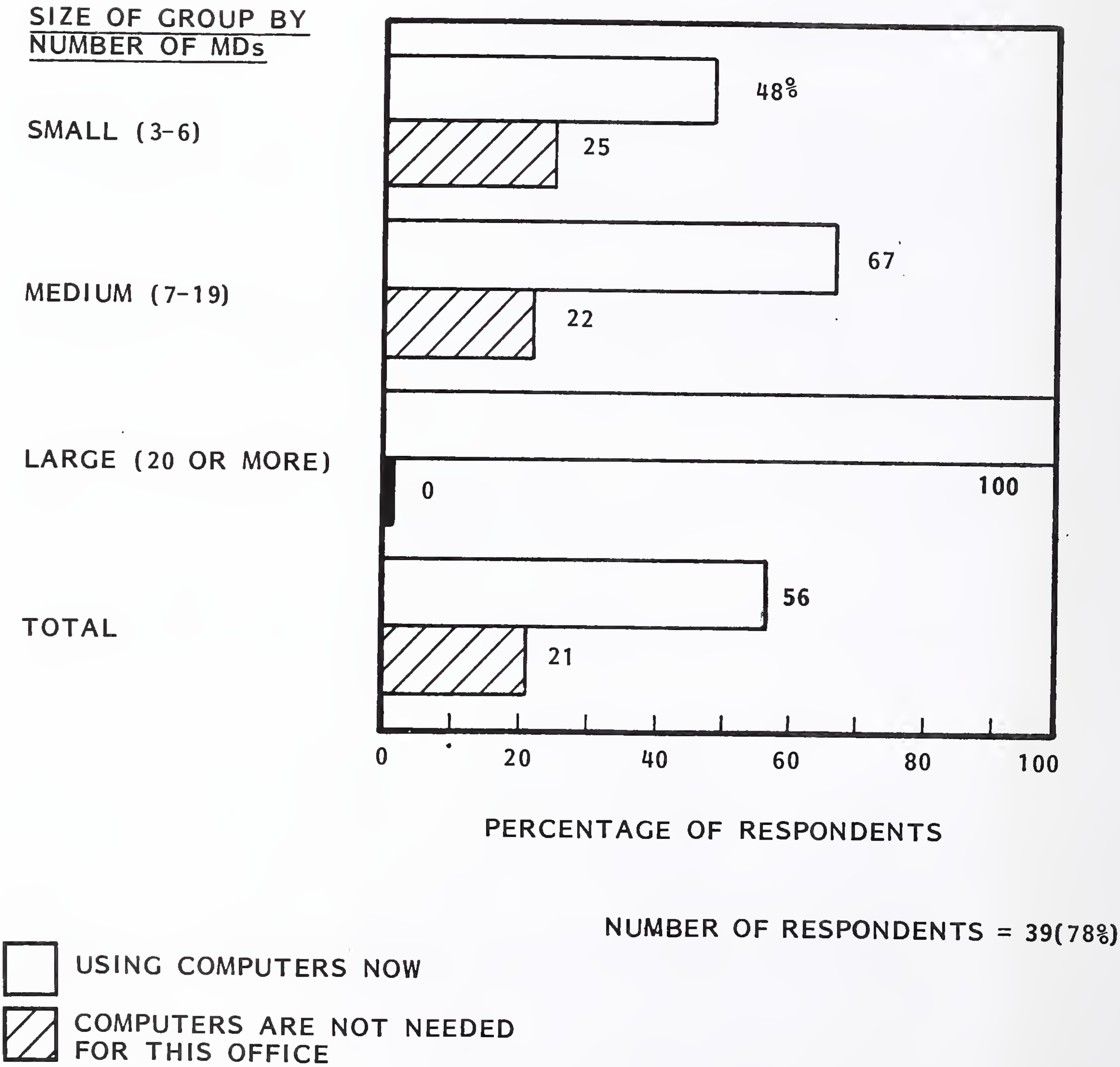
- Communications equipment and service needs of the establishments are almost entirely satisfied by local telephone companies.

- Fifty-six percent of medical offices and clinics with three physicians or more, are presently using computer equipment and services, as shown in Exhibit IV-1.

  - There are notable differences in the degree of use of computer equipment and services depending upon the size of the group. Only 48% of the small groups are presently involved, but 100% of the sample of large groups were using computer services. This stems from the fact that the large groups found the expense and burden of manual processing of very large volumes of paperwork intolerable. They were

EXHIBIT IV-1

PRESENT USERS OF COMPUTER EQUIPMENT AND SERVICES AS REPORTED BY RESPONDENTS



forced to use data processing early. The small groups could handle the smaller volume manually, so they are moving into automation later.

- The large establishments are almost all convinced of the need for computers or computer services, but this is not so among the small and medium establishments. From 22% to 25% of small and medium groups feel that they have no need for computers, a factor that must be contended with in this market.

- Four percent of the establishments are using word processing - all in situations where a special need exists, such as large outpatient clinics and radiology groups.

- Small photocopiers are universally installed.

- Two percent of the groups are considering interconnect equipment. The rest are satisfied with local telephone companies voice communications equipment and services.

B. PENETRATION OF COMPUTER AUTOMATION

- A general conclusion may be drawn concerning the use of computer equipment and computer services by the medical group practice industry:

  - A much larger percentage of small groups have installed computers than do large groups.

  - A much larger percentage of large groups are using remote computer services than do small groups.

- This anomaly had its beginnings in the mid sixties, when computers were being heavily promoted with community hospitals. At that time, cost effectiveness

was questionable at best, there were many software problems and EDP staffs were a problem to the establishments. Physicians were well aware of this and were very much inclined to hold off on automation in their own offices. As the volume of paperwork grew in the large offices, they were forced to automate and chose to do so with computer services vendors, again to avoid in-house installation problems. Small groups simply continued to process manually.

- As computer equipment improves and becomes less expensive, in-house installations become more attractive. The previously uncommitted small groups began installing equipment.

- Installed computer equipment as a function of size of the physicians' offices or clinics is shown in Exhibit IV-2. Forty-five percent of the small groups have installed small business computers to handle their business office applications.

- Use of computer services as a function of size of the physicians' offices or clinics is shown in Exhibit IV-3. Only 24% of the small groups are using computer services for their business office needs. Most of these are used as on adjunct to their in-house computer because some of the functions are not running on their own machines.

- There are nearly twice as many installed computers among the small users than there are users of computer services.

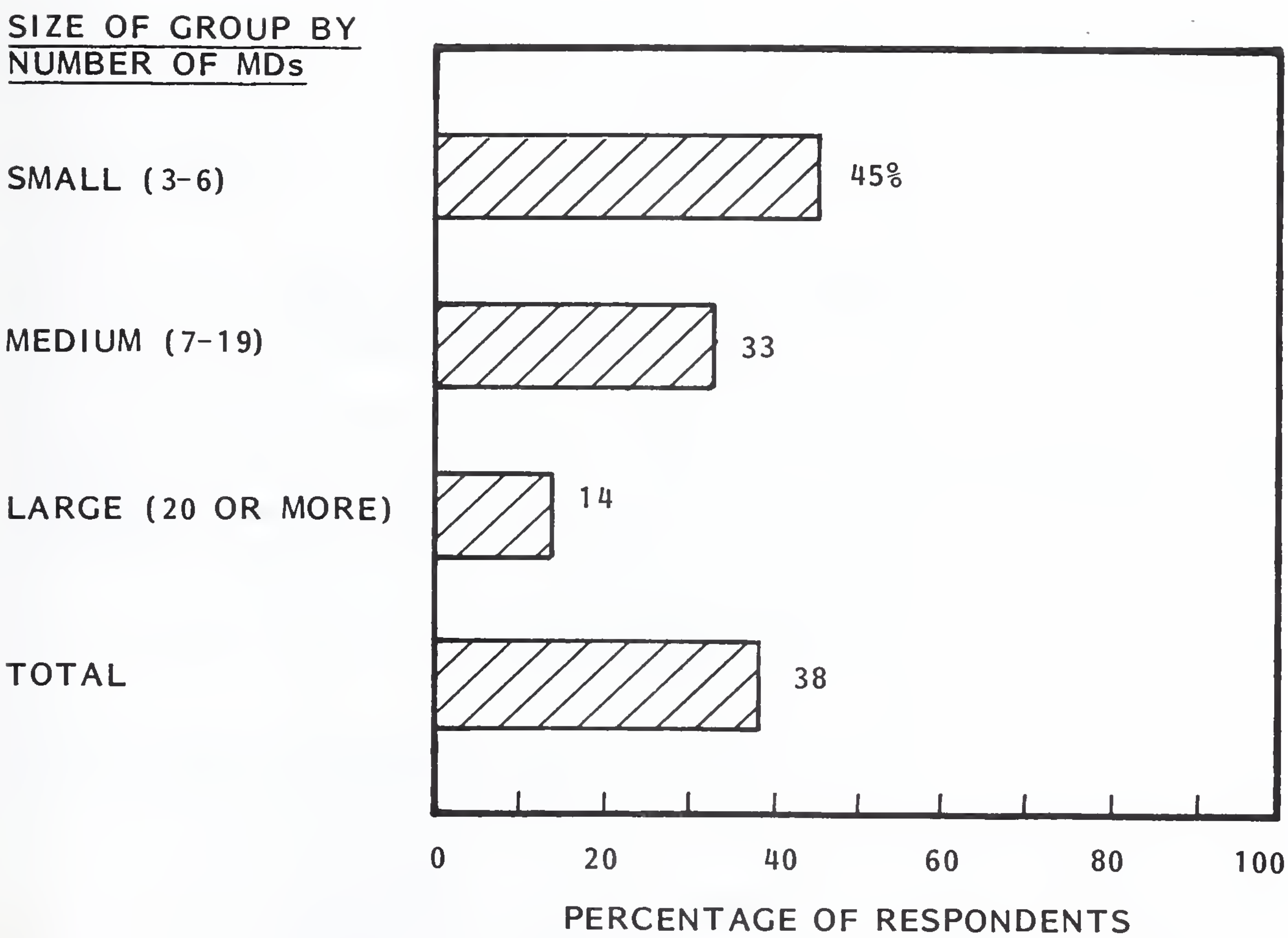
- This is reversed with the medium sized groups with 67% using computer services compared to 33% using installed computer equipment.

- All large users in our sample are using computer services compared to 14% using installed computer equipment. The installed equipment is used by the large groups as on adjunct to the services.

- Among all users the breakdown is nearly even with 38% of the groups using installed computers and 43% using computer services.

EXHIBIT IV-2

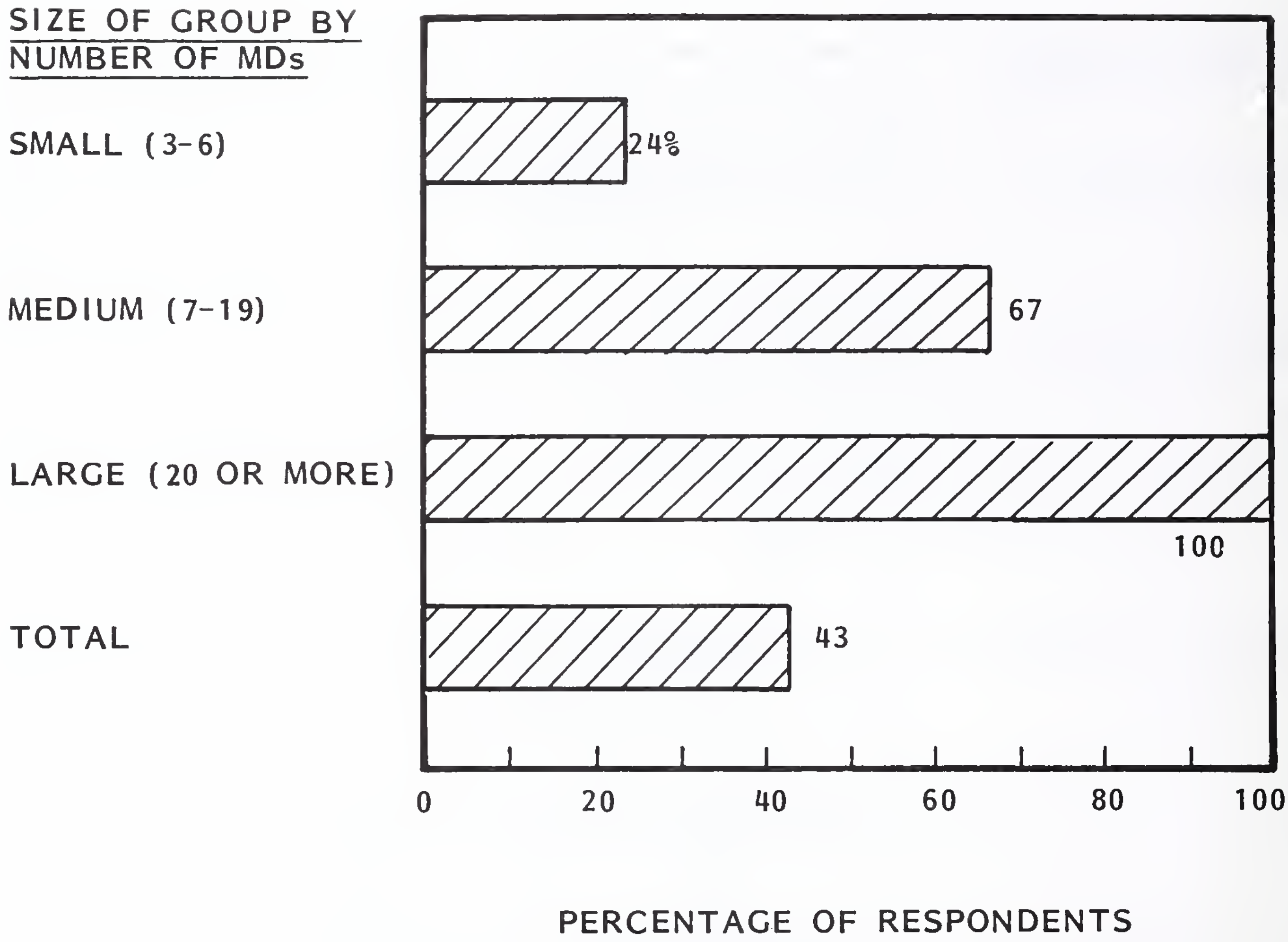
INSTALLED COMPUTER EQUIPMENT AS
REPORTED BY RESPONDENTS



NUMBER OF RESPONDENTS=37(74%)

EXHIBIT IV-3

USE OF COMPUTER SERVICES AS
REPORTED BY RESPONDENTS



NUMBER OF RESPONDENTS=50(100%)

- At present computer services vendors have a strong market position among the large and medium sized groups. However, the competition with in-house installations for the large groups will intensify as medical applications are automated.

- Although there is a broad involvement with computer equipment and services among the physicians' offices and clinics (56% of the groups), only the simplest applications have been automated. INPUT estimates that, compared to the potential market, the present degree of penetration is not more than 10%. (See Section VI - Equipment and Services Markets.)

- There is a growing interest in installing intelligent terminals among all sized medical groups. Installed computer terminals as a function of group size are shown in Exhibit IV-4. Twenty-four percent of all establishments are using terminals for a variety of purposes.

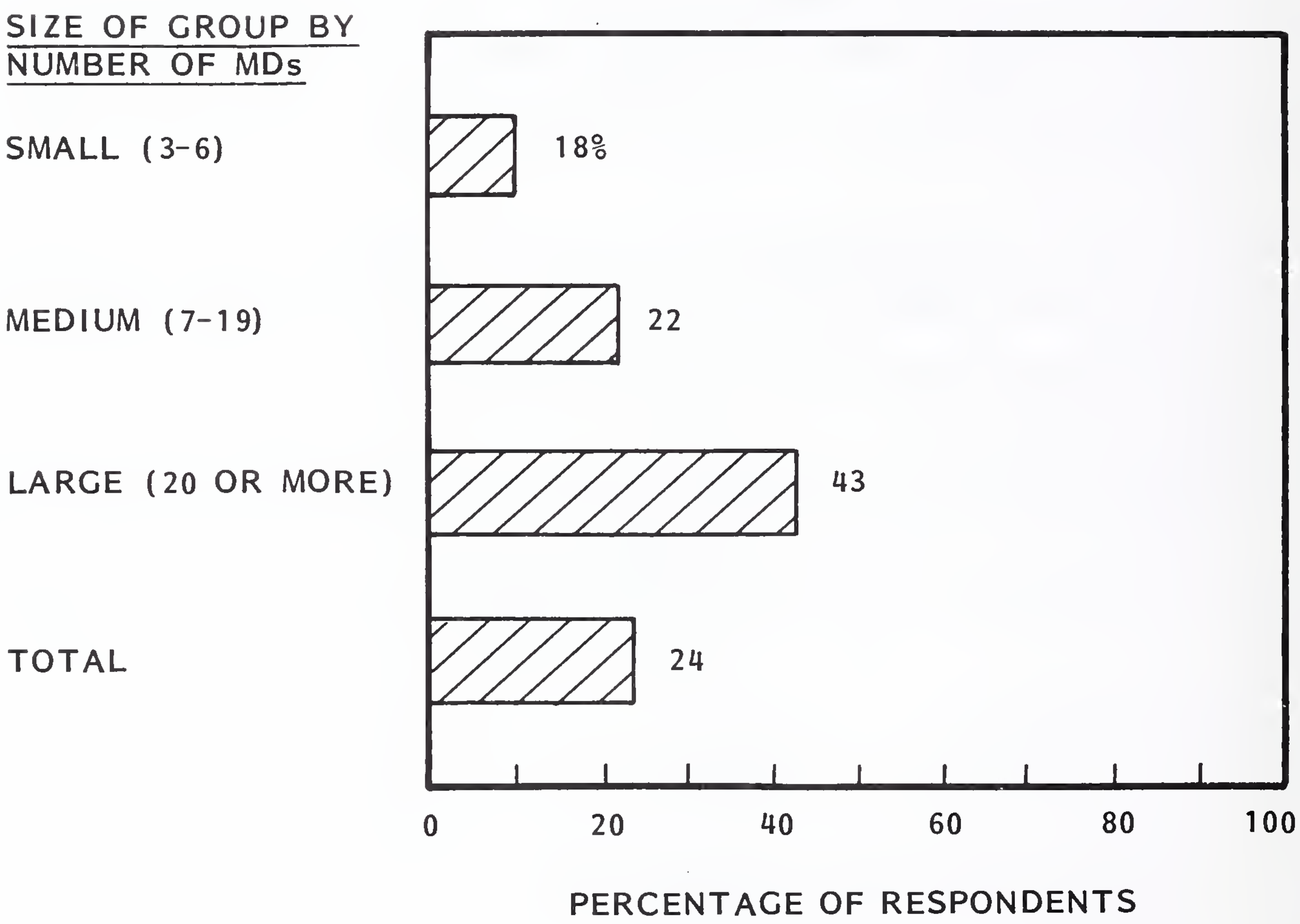
- Twice as many large groups (as a percent of the group) are using terminals as either the medium or small groups. This is further indication of the interest the large users have in remote computing services.

- The primary use of terminals among the small groups is to interact with their own installed computers. In the medium and large groups the major use is for remote computing services. The mode of operation of installed terminals as a function of size of group is shown in Exhibit IV-5.

- Two other future uses for terminals is to interact with remote offices and local hospitals. These two uses are expected to grow, particularly to interact with the local hospital. As medical applications are automated, both in the offices and the in the local hospital, physicians will find it convenient and economical to have on-line access to medical data stored in the hospital computer. In time, medical orders can be sent directly to the hospital from a local terminal in the physicans' office. However, this will develop slowly and market impact may well be beyond the time frame of this study.

EXHIBIT IV-4

INSTALLED COMPUTER TERMINALS AS
REPORTED BY RESPONDENTS



NUMBER OF RESPONDENTS=33(66%)

EXHIBIT IV-5

MODE OF OPERATION OF INSTALLED TERMINALS
AS REPORTED BY RESPONDENTS

SIZE OF GROUP BY NUMBER OF MDs	INTERACTIVE WITH:			
	INSTALLED COMPUTER	COMPUTER SERVICES	REMOTE OFFICE	LOCAL HOSPITAL
SMALL (3-6)	3	-	-	-
MEDIUM (7-19)	-	1	1	-
LARGE (20 OR MORE)	-	4	-	1
TOTAL	3	5	1	1

NUMBER OF RESPONDENTS =10 (20%)

- A listing of installed computer manufacturers by respondents is shown in Exhibit IV-6.

- The administration of most of the medical groups were unable to respond concerning the volumes of paperwork processed monthly, which is the key to cost effectiveness and size of processor. This is one part of the customer education requirements that vendors supplying to this market must provide. Estimates of volume of paperwork processed monthly, based on the research results of this study, are shown in Exhibit IV-7. The dominant requirements are for patient billing which range from 500 to 8,000 bills per month, depending on the size of groups involved. Excluded from these data are the very large clinics (greater than 50 physicians) where patient billing and insurance (super bill) can easily run 35,000 per month. Insurance forms run about one-half the volume of patient billing.

- When asked to rate the use of information processing from little importance to very important to their office, the views expressed are generally positive and support the same trends the previously discussed data shows. The number of respondents rating use of information processing very important to their office is shown in Exhibit IV-8. Use of terminals ranges from 43% of small users to 80% of large users. Use of computers ranges from 64% of small users to 20% of large users. Use of computer services range from 25% of small users to 67% of large users.

- Responses to more generalized questions such as:

  - Will more automation help?

  - What is your opinion of data processing equipment and office automation?

  were very mixed. In general, the groups are not well informed about automation and strong views are not well formed. There is little evidence of forward planning except for a general desire to further automate the business

EXHIBIT IV-6

MANUFACTURERS OF EDP EQUIPMENT
INSTALLED BY RESPONDENTS

<u>CPUs</u>

- BURROUGHS
- CENTURION
- DEC
- HEWLETT-PACKARD
- IBM
- NCR
- QANTEL
- WANG

<u>TERMINALS</u>

- DATAPOINT
- FOURPHASE
- WANG

EXHIBIT IV-7

ESTIMATED VOLUME OF PAPERWORK PROCESSED MONTHLY

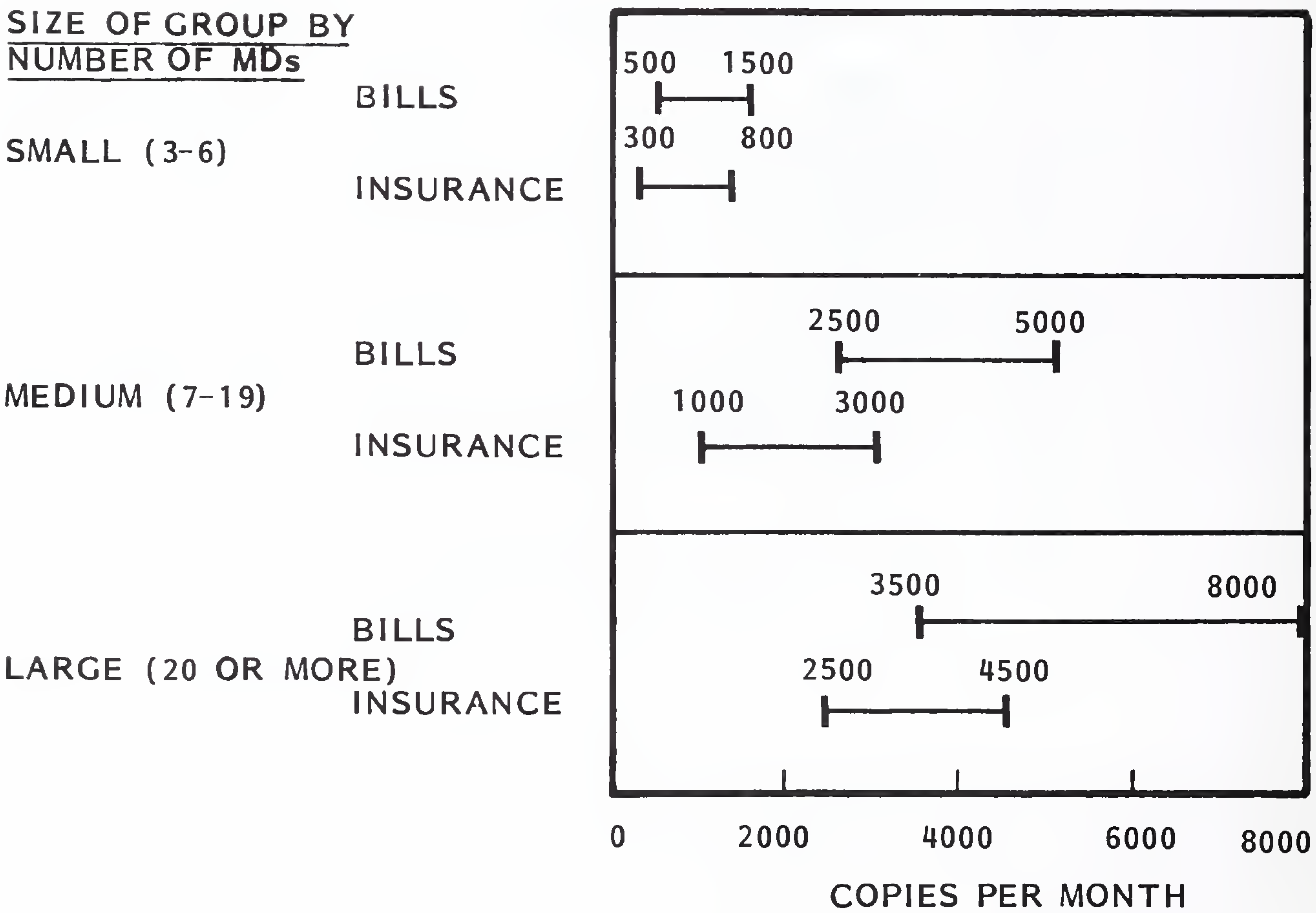


EXHIBIT IV-8

NUMBER OF RESPONDENTS RATING USE OF INFORMATION PROCESSING VERY IMPORTANT TO THEIR OFFICE

SIZE OF GROUP BY NUMBER OF MDs	TERMINALS	COMPUTERS	COMPUTER SERVICES
SMALL (3-6)	43%	64%	25%
MEDIUM (7-19)	50	60	43
LARGE (20 OR MORE)	80	20	67
TOTAL	56%	52%	46%

PERCENTAGE OF RESPONDENTS

NUMBER OF RESPONDENTS=28 (56%)

and financial functions. In this regard a typical response is: "We would like to add general ledger, scheduling, and personnel to the computer." To penetrate this market vendors need to educate the users - a major "missionary effort" is required. Other typical responses concerning further automation are:

- "Cost is a prohibitive factor."
- "Money up front is to expensive to justify further automation."
- "Computers are useful to large offices only."
- "Indecision among the medical staff is a problem."
- "We are very conscious about keeping medical records secret."
- "In-house would be beneficial."

C. FACTORS AFFECTING USE OF COMPUTER SERVICES

- The medium and larger medical offices and clinics regularly use computer services.
- Attitudes concerning use of outside computers services are shown in Exhibit IV-9. Again the favorable responses are from the medium and large groups.
- The method of sending and receiving data from a remote computing site to the user, and from the user to the site, is important from the point of view of expense, timeliness, and reliability.
- The dominent method among small users is, and probably will remain, by courier. The methods employed by size of group is shown in Exhibit IV-10. Medium and large groups are making substantial use of telephone lines to

EXHIBIT IV-9

ATTITUDES CONCERNING USE OF OUTSIDE COMPUTER SERVICES BY RESPONDENTS

SIZE OF GROUP BY NUMBER OF MDs	FAVORABLE	UN-FAVORABLE
SMALL (3-6)	33%	67%
MEDIUM (7-19)	71	29
LARGE (20 OR MORE)	100	0
TOTAL	70%	30%

PERCENTAGE OF RESPONDENTS

NUMBER OF RESPONDENTS=20 (40%)

EXHIBIT IV-10

METHOD OF SENDING AND RECEIVING DATA
BY RESPONDENTS

SIZE OF GROUP BY NUMBER OF MDs	BY COURIER	BY TELEPHONE LINE
SMALL (3-6)	100%	-
MEDIUM (7-19)	60	40
LARGE (20 OR MORE)	17	83
TOTAL	50%	50%

PERCENTAGE OF RESPONDENTS

NUMBER OF RESPONDENTS=14 (28%)

transmit the data. Forty percent of medium groups are using electronic data transmission and 83% of large groups are. In total 50% of all groups are using courier and 50% are using telephone lines.

- Sensitivity among users concerning where medical records are stored may be a barrier to further penetration of the market for computer services. This becomes important as medical applications evolve. Where data is presently stored is shown in Exhibit IV-11. The data reflects the prevalent use of computer services by the large groups where 80% are storing data at a remote computing site. Sixty percent of small users store data locally. At present there appears to be no major adversion to storing records remotely.

D. COMPUTER EQUIPMENT AND SERVICES VENDORS

- Computer equipment and services vendors have a mixed attitude towards the medical offices and clinics market.

  - Most vendors are active in the market to a limited degree.

  - Certain vendors regard the market in this industry to be too small to warrant their effort.

  - No one vendor dominates the market.

- Development of industry specific software is vital to a successful effort in this industry. Approaches vary among the vendors.

  - Some vendors develop their own software in a "pilot installation" and then sell it to other users.

  - Other vendors sell equipment only to system houses who in turn develop the software.

EXHIBIT IV-11

WHERE DATA IS STORED
BY RESPONDENTS

SIZE OF GROUP BY NUMBER OF MDs	LOCAL OFFICE	REMOTE SITE
SMALL	63%	37%
MEDIUM	33	67
LARGE	20	80
TOTAL	42%	58%

PERCENTAGE OF RESPONDENTS

NUMBER OF RESPONDENTS=19 (38%)

- Many, but not all of the comuter services vendors have entered the market.

- Certain vendors are presently involved in the development of software for medical applications. The first applications are for patient and physican scheduling, the next is for automated patient records. Vendors involved in development medical applications view the market for such applications to be from one to three years away.

• Vendors must establish local presence because of the nature of the medical offices and clinics industry.

• Systems houses are most evident in this industry and they should do well.

E. PENETRATION OF OFFICE AUTOMATION

• Office automation includes text or word processing, photocopying, facsimile transmission, as well as the use of multifunction equipment.

• In the medical group practice industry:

  - Virtually all establishments use photocopying equipment.

  - Text or word processing is rarely used.

  - Use of facsimile or multifunction equipment is nil.

I. WORD PROCESSING EQUIPMENT

- In this study there were three respondents using word processing equipment, 6% of the sample. Most of the respondents did not understand what word processing equipment was or what it could be used for. The three current users disclosed by this study are as follows:

  - A large outpatient clinic with 96 employees and revenues of about $2 million per year.

  - A large diversified clinic with 600 employees and revenues in excess of $2.5 million per year.

  - A five physician radiology group with revenues of about $750,000 per year.

- INPUT believes that there will be limited use of word processing in physician offices and clinics in special situations.

  - One will be in very large groups where the volume of text generated will warrant the expense.

  - A second will be with certain specialty group practices. Groups practicing internal medicine (OB/GYN, surgery, etc.) do not generate a sufficient volume of text to make word processing attractive. However, specialties, such as:

    - Radiology,

    - Pathology,

    - Psychiatry

do have a potential need for word processing and represent a limited market for word processing equipment.

2. PHOTOCOPYING EQUIPMENT

- All respondents had photocopy equipment installed, which reflects the heavy paperwork orientation of the industry.

- The number of photocopies ranges from 750 per month to 13,000 per month depending upon the size of the establishment as shown in Exhibit IV-12.

- Both coated paper (40% of respondents) and plain paper (60% of respondents) copiers are used extensively.

- Manufacturers of photocopy equipment installed by respondents are listed in Exhibit IV-13.

F. PENETRATION OF NON-TELCO COMMUNICATIONS EQUIPMENT AND SERVICES

- Almost all respondents thought of communication equipment strictly as voice equipment and felt that their needs are well supplied by local telephone companies.

- When asked "what equipment source other than the local telephone company would you consider contacting for communication equipment?", 35% of respondents mentioned an interest in interconnect equipment.

    - The present installation of communications interconnect equipment in medical group practices is minimal. However, the interest expressed in considering interconnect equipment may be indicative of a growing market.

EXHIBIT IV-12

NUMBER OF PHOTOCOPIES MADE PER MONTH
BY SIZE OF ESTABLISHMENT
BY RESPONDENTS

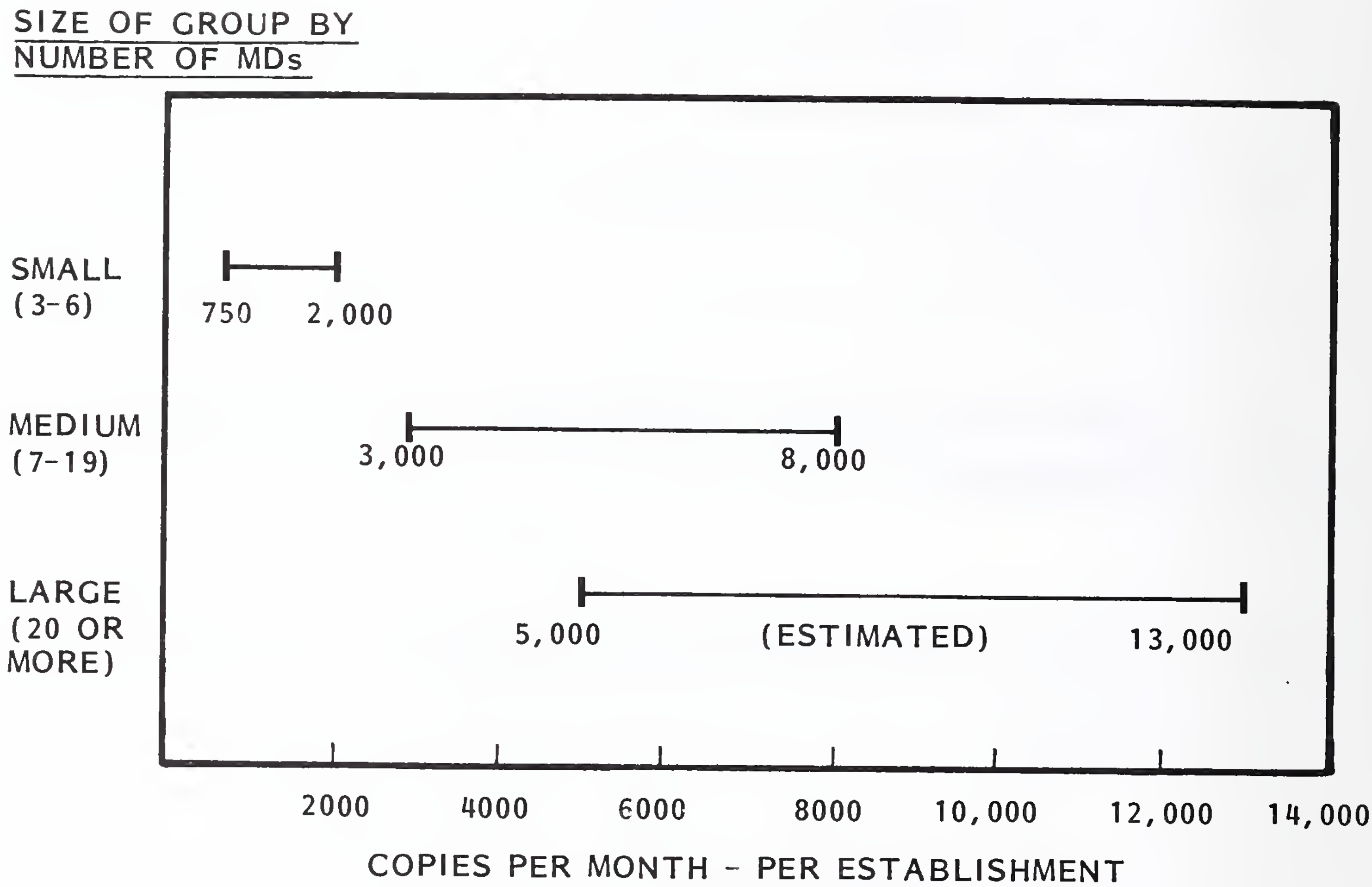


EXHIBIT IV-13

MANUFACTURERS OF PHOTOCOPY EQUIPMENT INSTALLED BY RESPONDENTS

- XEROX
- MINOLTA
- 3M
- SAVIN
- IBM
- MIDAS
- PITNEY BOWES
- SIX OTHER MANUFACTURERS

V APPLICATIONS ANALYSIS

V APPLICATIONS ANALYSIS

A. FUNCTIONAL USE OF COMPUTERS AND/OR COMPUTER SERVICES

- As previously noted, 56% of physicians' offices and clinics with three MDs or more are using computer automation.

    - Applications are limited to financial and administrative functions with medical applications just now appearing.

    - Compared to the industry potential, penetration of computer automation is very small. INPUT estimates it to be less than 10%. (See Section VI - Equipment and Services Markets.)

- Since many business applications have been automated, that segment of the market exists and is amenable to analysis, however, the potentially much larger segment of the market, patient management, does not yet exist and the rate of market penetration will be influenced by many variables. Chief among these is the aggressiveness with which vendors pursue the market.

- Financial and administrative functions are defined to include:

    - Patient billing.

    - Accounts receivable.

- Accounts payable.

- Payroll.

- Insurance.

- General ledger.

- Other financial.

• However, this simple listing does not convey the degree of sophistication of a complete "Group Practice Management System" which may contain many refinements. Among these are aging analysis of receivables, automatic payment allocation, physician activity report, etc. An examples of a complete (hypothesized) Group Practice Management System is shown in Exhibit V-1.

• Patient billing and accounts receivable are the most cost effective of the business applications and are the ones most groups select first. These two applications relate closely to both volume of paperwork (labor saving) and improved cash flow coming from timely collections. Additions of other functions are done over a period of time; sometimes years. However, expansion of additional applications (including medical) is virtually unlimited and it is good strategy to get a base started and then help it grow.

• The primary justification for computer automation is to be found in three factors:

  - Improved cash flow through better collections.

  - Cost reduction by reducing manual clerical labor.

  - Acquiring the experience of other groups or clinics through industry specific application software.

EXHIBIT V-1

COMPLETE (HYPOTHETICAL) GROUP PRACTICE MANAGEMENT SYSTEM

- PATIENT BILLING
  - BILLING HISTORY
- ACCOUNTS RECEIVABLE
  - CASH RECEIPTS
  - AGING ANALYSIS
  - AUTOMATIC PAYMENT ALLOCATION
- ACCOUNTS PAYABLE
- PAYROLL
  - PERSONNEL RECORDS
- INSURANCE
  - THIRD PARTY BILLING
- GENERAL LEDGER
- OTHER FINANCE
  - PHYSICIANS ACTIVITY REPORT (ACTIVITY AND REVENUE BY MD)
  - YEAR TO YEAR PATIENT ACCOUNT HISTORY
- ON-LINE INQUIRY/REPORTING
  - FAMILY ACCOUNT
  - MEMBER ACCOUNT
  - FILE INQUIRY
  - FILE REPORTING
  - FILE MAINTENANCE
- TEXT EDITING

- Industry software developed by equipment vendors, RCS vendors, consultants, medical societies or a consortium of clinics implies that no one clinic will have to incur the development costs.

- Methods used by establishments to automate various functions have been roughly categorized in this study between in-house computers, favored by smaller groups, and computer services, favored by larger groups. However, methods are more diverse than that depending upon the degree of involvement of the establishment.

  - A listing of the spectrum of systems available is contained in Exhibit V-2.

- This computer automation development pattern now evolving with physicians' offices and clinics has many similarities to that already well advanced in hospitals. These institutions started with business applications and are now rapidly moving into patient management and medical, applications. A study of computer services markets in hospitals is contained in INPUT's Industry Report No. 15, October 1978 from the Market Analysis Services.

- A major goal of this study was to determine how far the present users of computer automation had progressed in automating the various business and medical applications. This is shown for small groups in Exhibit V-3.

- The small groups using automation have brought up less than one-half of the major applications (patient billing - 48% and accounts receivable - 40%). Other applications are even less. Insurance, for example, is only automated among 9% of the small users.

- The implication for further automation of small groups is toward more effort in automating business applications before moving into medical applications. Only 48% are involved in automation and those that are have automated less than one-half of the business applications.

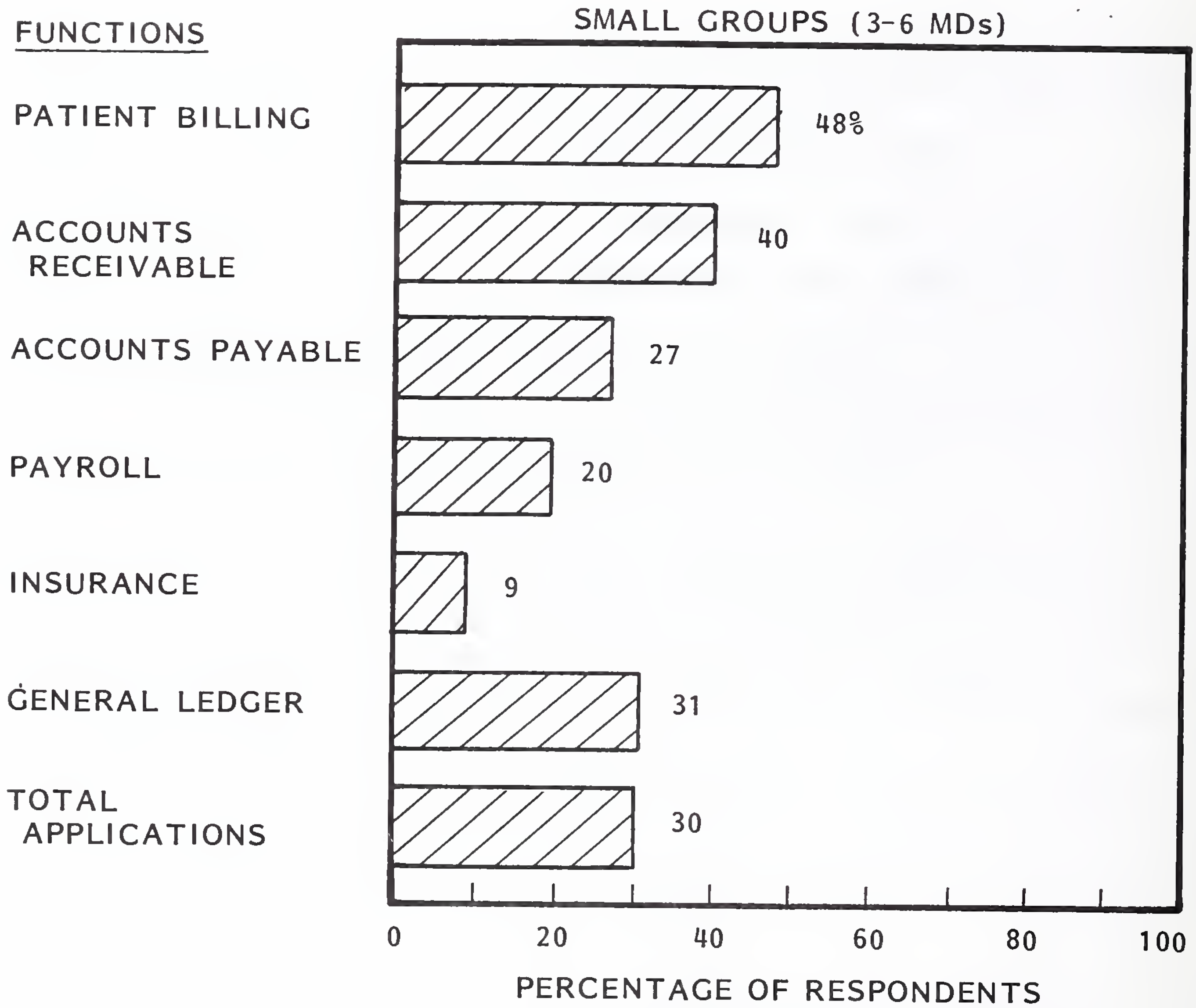
EXHIBIT V-2

SPECTRUM OF AUTOMATED SYSTEMS AVAILABLE

- COMPUTER BATCH PROCESSING SYSTEM
  - SERVICE BUREAUS, COURIER OR MAIL SERVICE
- COMPUTER TIME-SHARING SYSTEM
  - TERMINAL LINK - REMOTE BATCH PROCESSING
- TURNKEY COMMERCIAL COMPUTER SYSTEM
  - COMPUTER AND SOFTWARE LEASE/PURCHASE
- SELF DEVELOPED COMPUTER SYSTEM
  - COMPUTER LEASE/PURCHASE

EXHIBIT V-3

BUSINESS APPLICATIONS - PERCENT AUTOMATED BY FUNCTION AS REPORTED BY RESPONDENTS



NUMBER OF RESPONDENTS=34(100%)

- Business applications by percent automated by function for medium sized groups are shown in Exhibit V-4. As expected, the degree of automation in this group category is progressesly larger (patient billing - 53% and accounts receivable - 71%).

- These groups have moved into third party billing (insurance) by 44%, more substantially than either the smaller or larger groups.

- With 67% of these groups involved in computer automation and with a higher degree of automation of the business functions, there is still a considerable market left for business applications before moving on with medical functions, but less so than in the small groups.

- Business Applications by percent automated by function for large sized groups are shown in Exhibit V-5. Automation of business functions in these groups is extensive. (Two thirds of all functions automated.)

- All of the groups in this category are involved with computer automation. There is much less room for growth in automation of business applications among the large groups. Conversely, groups in this size category have already started in a moderate way with automation of medical applications, and are expected to accelerate their efforts in this regard over the next five years.

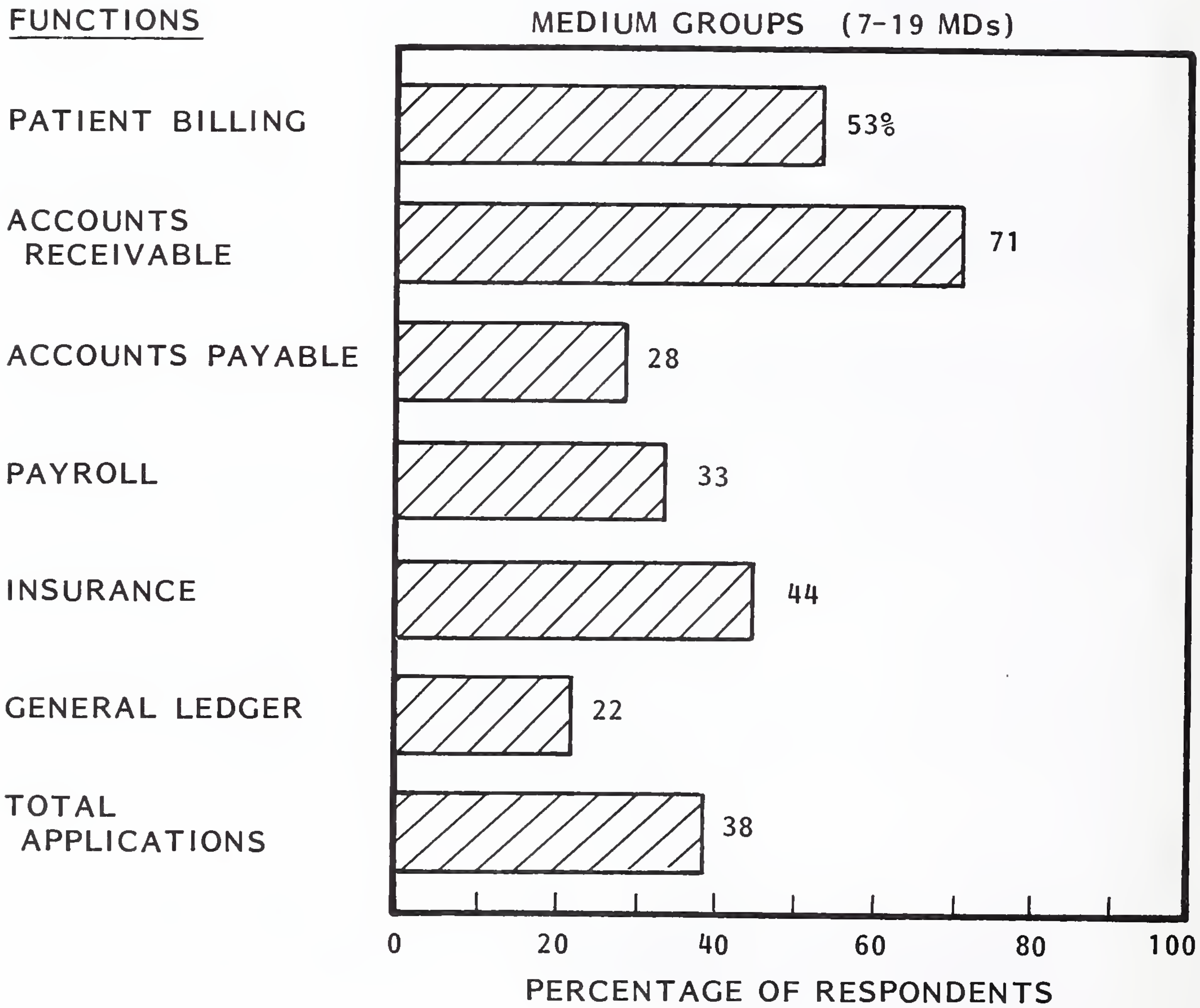
- Business Applications by percent automated by functions for the total of all groups are shown in Exhibit V-6. For the medical group practice industry the degree of automation of the business applications is something less than one-half.

- Considering that only 56% of the groups are involved with automation, there is a considerable market for automation of business systems and an untouched market for medical systems.

- The degree of automation of business applications for the medical group practice industry (SIC-801) for groups of three or more physicians is shown in

EXHIBIT V-4

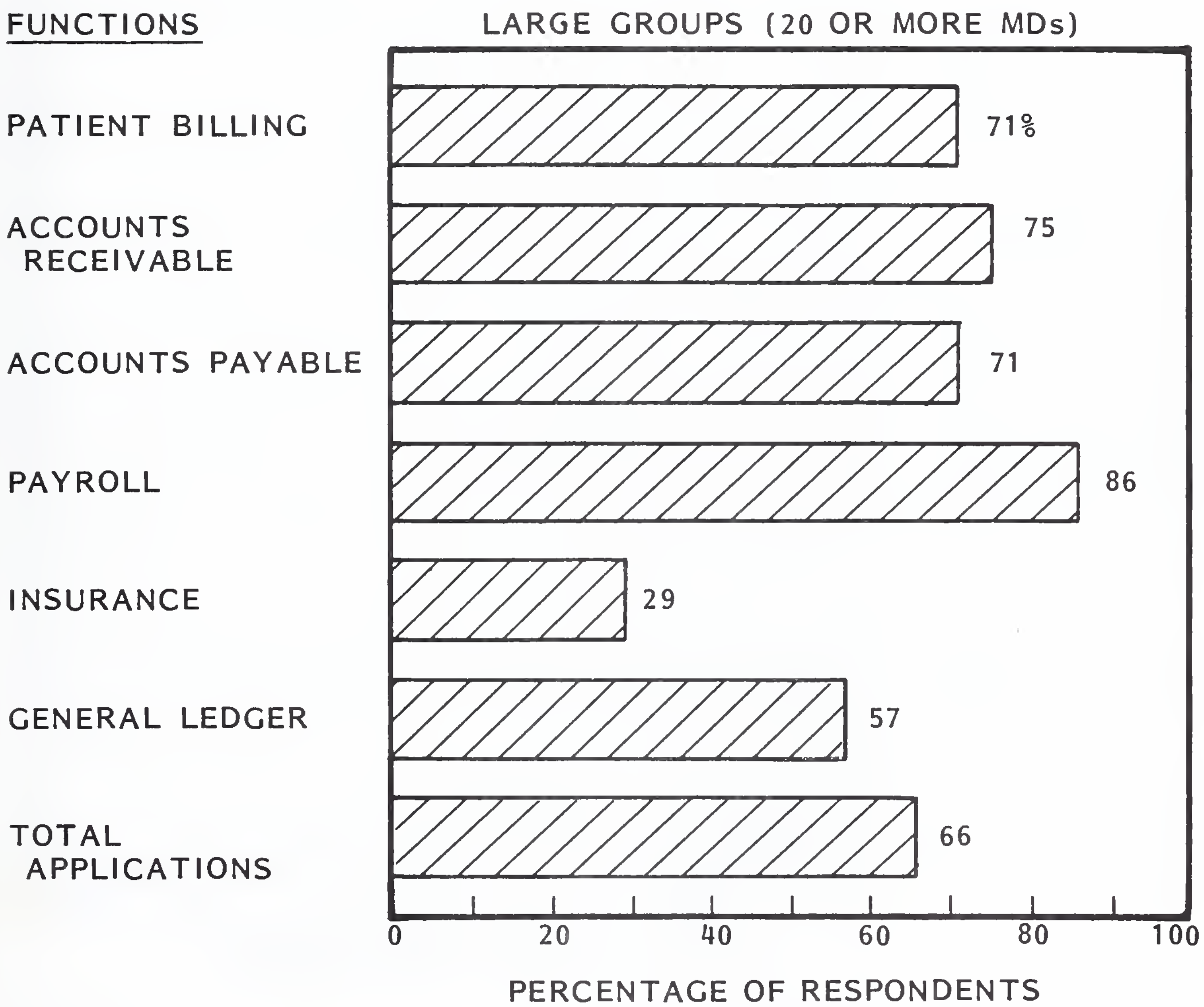
BUSINESS APPLICATIONS - PERCENT AUTOMATED BY FUNCTIONS AS REPORTED BY RESPONDENTS



NUMBER OF RESPONDENTS=9(100%)

EXHIBIT V-5

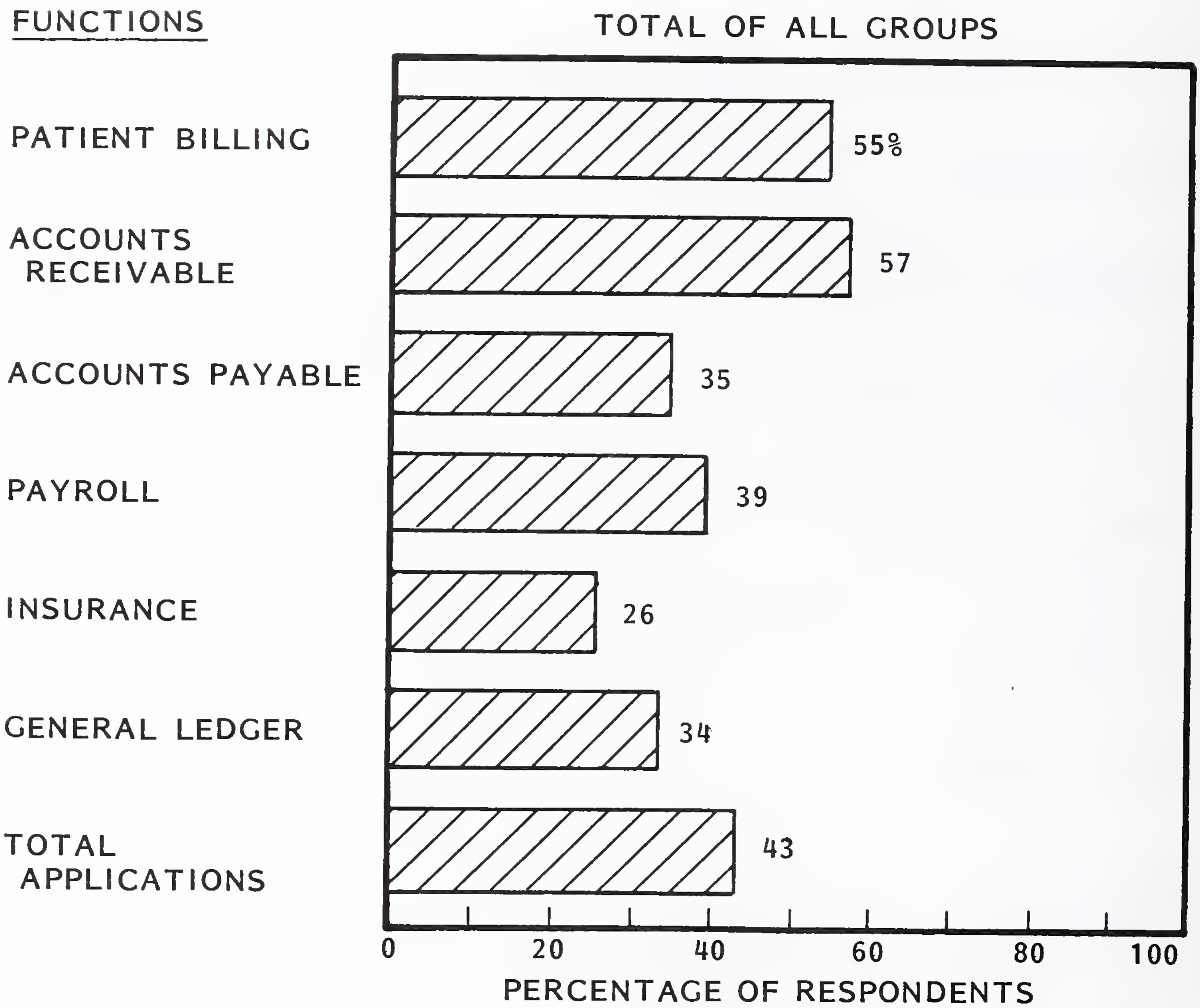
BUSINESS APPLICATIONS - PERCENT AUTOMATED BY FUNCTION AS REPORTED BY RESPONDENTS



NUMBER OF RESPONDENTS=7(100%)

EXHIBIT V-6

BUSINESS APPLICATIONS - PERCENT AUTOMATED BY FUNCTION AS REPORTED BY RESPONDENTS



NUMBER OF RESPONDENTS=50(100%)

Exhibit V-7. Considering both the non-automated groups and the non-automated business applications, the degree of penetration overall is only 26% (35% for patient billing and accounts receivable).

- Further, considering the market for medical applications to be several times the size of the market for business applications, the overall market penetration is less than 10%.

- Large groups are more automated than small groups. Because of their size, their need for automation is much more acute. Aggressive selling by vendors in the computer services industry resulted in use of computer automation by all of the large groups.

- Medical applications will appear first in the large and medium sized groups. It is not clear whether the present dominance of this market by computer services companies will continue, or whether in-house computers, compatible with existing business services, will be installed.

- Certain of the business applications that are considered candidates for computer automation, are much less attractive to users. Low priority applications for automation as reported by respondents are listed in Exhibit V-8.

- As previously reported, many respondents regard cost of computer equipment and services to be a prohibitive factor for further automation.

- Reflecting attitudes in another area, the following comments from respondents are typical concerning further automation:

  - "We have no further needs."

  - "Choose not to do so - must keep patient records private."

  - "Need to find out what is available."

EXHIBIT V-7

DEGREE OF AUTOMATION OF BUSINESS APPLICATIONS
FOR THE MEDICAL GROUP PRACTICE INDUSTRY (S.I.C. CODE-801)
FOR GROUPS OF THREE PHYSICIANS OR MORE

FUNCTION	PRESENT USERS OF COMPUTERS	PRESENT AUTOMATION BUSINESS FUNCTIONS AMONG PRESENT USERS	DEGREE OF AUTOMATION BUSINESS FUNCTIONS - OVERALL
PATIENT BILLING	61%	55%	34%
ACCOUNTS RECEIVABLE	61	57	35
ACCOUNTS PAYABLE	61	35	21
PAYROLL	61	39	24
INSURANCE	61	26	16
GENERAL LEDGER	61	34	21
TOTAL APPLICATIONS	61%	43%	26%

PERCENTAGE OF RESPONDENTS

NUMBER OF RESPONDENTS=50(100%)

EXHIBIT V-8

LOW PRIORITY APPLICATIONS FOR AUTOMATION
AS REPORTED BY RESPONDENTS

- BUDGET ADMINISTRATION
- COST ACCOUNTING
- TAX ACCOUNTING
- PERSONNEL RECORDS
- TIME KEEPING
- DIETARY
- SUPPLIES INVENTORY

- "Other priorities."

- "Like to be personal."

- The preceding comments are indicitive of the fact that users in the medical group practice industry need to be better educated concerning use and benefits of computer automation. This is the key to successful marketing to physicians' offices and clinics. Sales representatives must be well versed in all application areas.

- The percent of respondents expecting to automate additional functions within the next two years are shown in Exhibit V-9. Twenty-three percent responded affirmatively to this inquiry.

- Software is developed by equipment vendors, RCS vendors, consultants, medical societies or consortium of clinics and supplied to physicians' offices and clinics.

- The source of the software programs is shown in Exhibit V-10.

  - The single largest supplier of software are RCS companies; they supply 46% of the total. They supply 60-70% of the software for medium and large sized groups.

  - Equipment vendors supply 29% of the programs. They meet 35% of the software needs for the small groups.

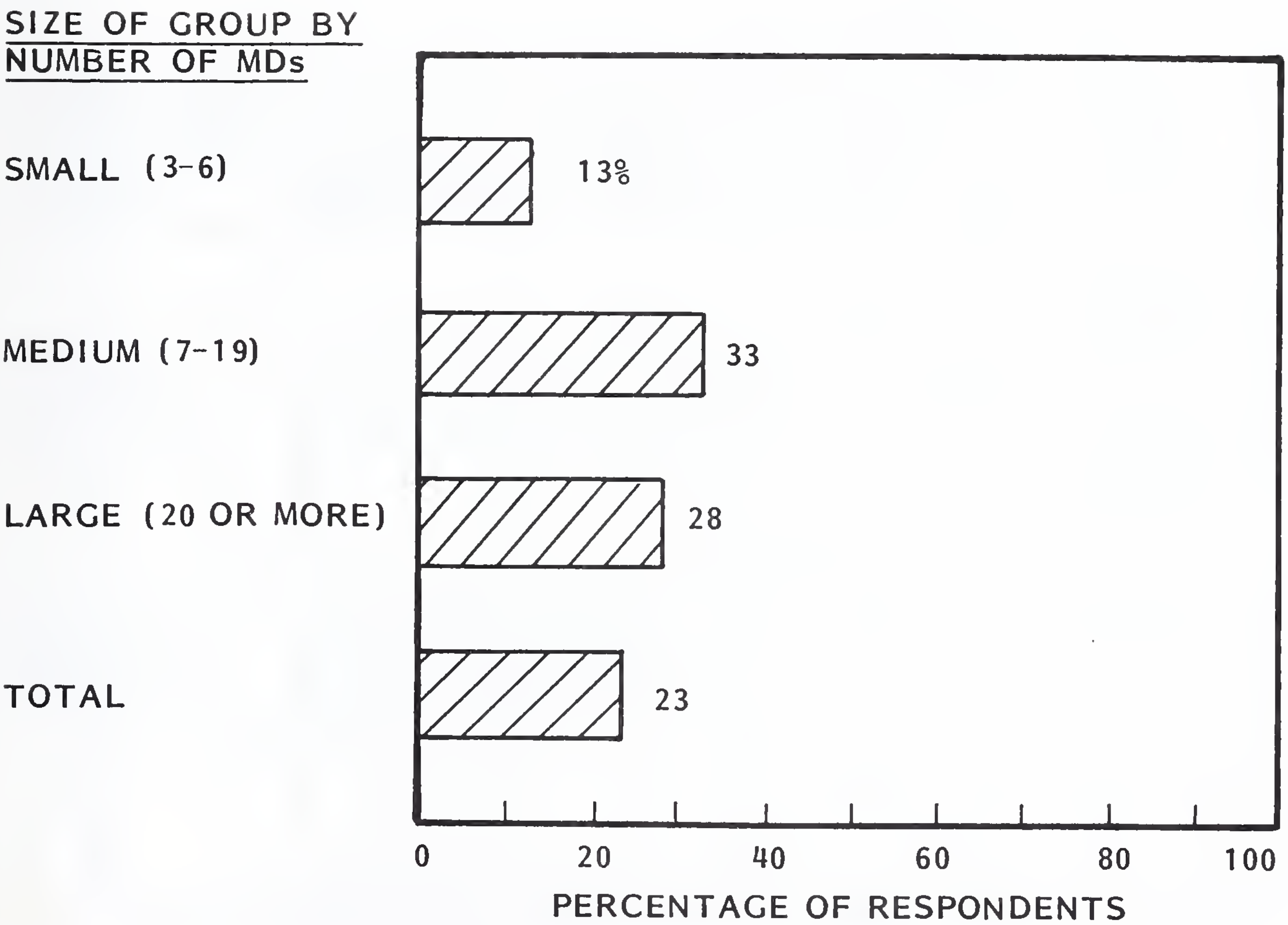
  - Software houses supply 18% of the programs, almost evenly divided among the group sizes.

  - Seven percent of the respondents developed their own software.

- Exhibit V-11 shows the percentage distribution between standard and custom programs from the users point of view. Seventy-four percent of the programs

EXHIBIT V-9

RESPONDENTS EXPECTING TO AUTOMATE
ADDITIONAL FUNCTIONS WITHIN
THE NEXT TWO YEARS



NUMBER OF RESPONDENTS=7 (23%)

EXHIBIT V-10

SOURCE OF THE SOFTWARE AS REPORTED BY RESPONDENTS

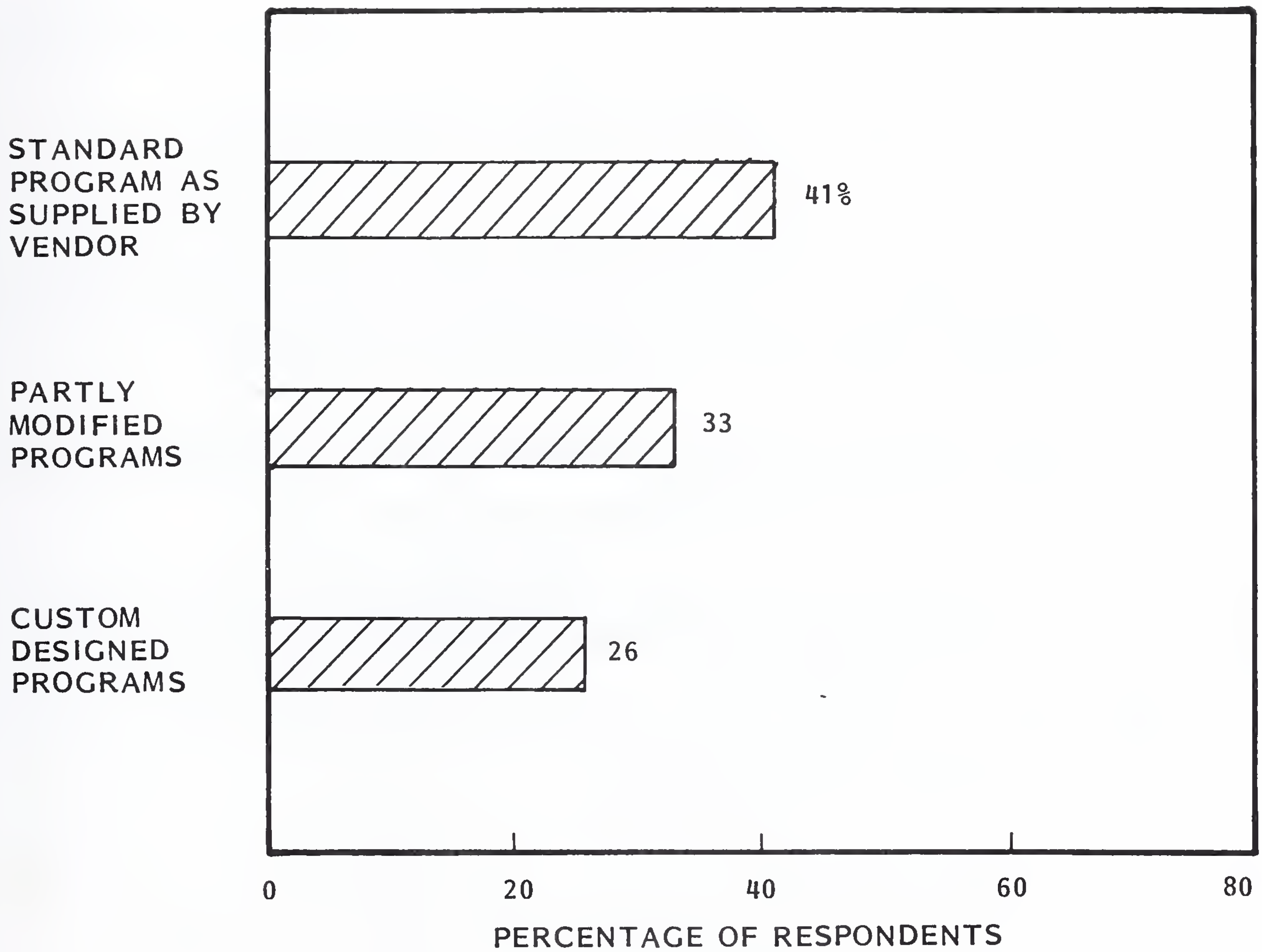
TYPE OF VENDOR	SIZE OF GROUP BY NUMBER OF MDs			
	SMALL 3-6	MEDIUM 7-19	LARGE 20 OR MORE	TOTAL
COMPUTER SERVICE VENDORS	35%	60%	67%	46%
EQUIPMENT VENDORS	35	20	17	29
SOFTWARE HOUSES	18	20	16	18
WRITE OUR OWN	12	0	0	7

PERCENTAGE OF RESPONDENTS

NUMBER OF RESPONDENTS=28(56%)

EXHIBIT V-11

CUSTOM OR STANDARD PROGRAMS AS
REPORTED BY RESPONDENTS



NUMBER OF RESPONDENTS=27(54%)

are standard or partly modified and 26% are custom designed programs. It is likely, from a suppliers point of view, that the partly modified programs differ little from the standard programs.

- The software is typically developed at a "pilot site" specifically for physician group practice. In this sense, nearly all of the programs are industry specific.

- Most users will want a certain degree of customizing of their programs. This must be kept within bounds for cost reasons, but suppliers to the medical group practice industry must offer sufficient flexibility.

B. COMPUTER AUTOMATION OF MEDICAL APPLICATIONS

- The automation of certain medical or patient management applications has already begun. It is small now but is expected to grow rapidly over the next five years, if there is sufficient vendor interest in the market.

- Market potential for medical applications is twice that for business applications (at least three times).

- A hypothesized listing of medical application functions is shown in Exhibit V-12. This listing reflects the medical group practice industries interests today, particularly with respect to:

  - Registration and scheduling.

  - Medical records.

  - Laboratory records.

  As these applications prove to be useful and cost effective, the applications can grow significantly.

EXHIBIT V-12

COMPLETE (HYPOTHETICAL)

MEDICAL APPLICATIONS PACKAGE

- REGISTRATION AND SCHEDULING
  - PATIENT REGISTRATION
  - PATIENT SCHEDULING
  - PHYSICIAN SCHEDULING
  - PATIENT RECALLS AHEAD
- MEDICAL RECORDS STORAGE AND RETRIEVAL
  - PATIENT/PROBLEMS CROSS INDEX
- LABORATORY REPORTING
- ON-LINE TO HOSPITAL MEDICAL INFORMATION SYSTEMS (FUTURE)

- A logical next step is to tie the groups (on-line) into the hospitals medical information system which would open up more opportunities, but may be beyond the time scale of this study.

- Medical applications will evolve in two ways:

  - Expansion of an existing business computer system or service.

  - A new larger capacity computer system or service designed to either take over the business functions or be compatible with the present system.

- If medical applications systems are designed to be compatible with and interface with existing business computer systems, they may be supplied to groups without displacing an existing supplier.

- Interest in automation of medical functions as reported by respondents is shown in Exhibit V-13.

  - As expected, the interest is greatest with the large groups.

  - Interest is significant with the medium (11-14%) and large (14-28%) groups.

  - Overall, the percent of favorable responses was 21%.

- One of the large respondents installed a complete business package and a word processing, patient records, laboratory reporting, and inventory system. This is a large group and is not typical. However, it demonstrates an existing interest. Exhibit V-14 shows a profile of this clinic.

EXHIBIT V-13

INTEREST IN AUTOMATION OF MEDICAL FUNCTIONS AS REPORTED BY RESPONDENTS

FUNCTION TO BE AUTOMATED	PERCENT RESPONSES - SIZE OF GROUP BY NUMBER OF MDs		
	SMALL 3-6	MEDIUM 7-19	LARGE 20 OR MORE
PATIENT AND PHYSICIAN SCHEDULING	-	14%	28%
PATIENT RECORDS	5%	-	28%
LABORATORY REPORTING	-	11%	14%

EXHIBIT V-14

PROFILE OF RESPONDENT WITH ADVANCED SYSTEM
AS REPORTED IN THIS STUDY

- MEMORIAL MEDICAL CLINIC
  - $4 MILLION IN REVENUE
  - 50 PHYSICIANS
  - 15 TECHNICIANS
  - 500 NURSES
  - 100 CLERICAL/ADMINISTRATION

    ———

    675 TOTAL
  - 300 PATIENTS PER DAY
  - 35,000 BILLS PER MONTH
- ON-LINE TO COMPUTER SERVICE VENDOR
  - 5 INSTALLED TERMINALS
- AUTOMATED FUNCTIONS
  - PATIENT BILLING
  - ACCOUNTS RECEIVABLE
  - GENERAL LEDGER
  - ACCOUNTS PAYABLE
  - PAYROLL
  - WORD PROCESSING
  - PATIENT RECORDS
  - LABORATORY REPORTING
  - INVENTORY

C. TECHNICAL RESOURCE REQUIREMENTS

- The existing degree of involvement the medical groups have with computer automation and the very low market penetration presents a good opportunity for vendors to sell additional computer equipment and services.

  - Small groups are much more inclined toward small in-house computers.

  - Large groups are much more inclined toward the use of remote computing with a service company.

- Installing computer equipment or services inevitably leads to additional capability.

  - This presents a good opportunity for vendors.

  - Growth will be particularly enhanced by the trend to move into the more sophisticated medical applications.

- Use of interactive equipment for hands on use by both administrators and physicians is growing and presents a good opportunity for vendors.

- There is a widespread belief among the medical groups that equipment costs are prohibitive. There is a lack of knowledge among the groups about applications for computer automation. The implications are clear.

  - Cost effectiveness must be demonstrated and marketing representatives must be applications oriented.

  - More customer education is needed about the advantages, capability, and benefits of computer automation.

- The most effective way for vendors to demonstrate benefits and cost effectiveness is by reference selling. Information about their successful pilot installations should be widely disseminated.

VI EQUIPMENT AND SERVICES MARKETS

VI EQUIPMENT AND SERVICES MARKETS

A. SIZE OF MARKET

1. COMPUTER EQUIPMENT AND SERVICES

- Based upon the results of this study medical group practices spend:

  - $14.5 million per year (Exhibit VI-6) or

  - $193 per year per MD (Exhibit VI-7)

  for computer equipment and services, low figures reflecting an unpenetrated market.

- For those groups that are automated, annual expenditures for equipment and services by size of group are:

  - Small (3-6 MDs) $ 8,000

  - Medium (7-19 MDs) $ 21,000

  - Large (20 or more MDs) $ 95,000

- Of the 294,730 non-federal physicans in this country who are engaged in patient care, 75,694 are engaged in group practice in groups of three or more.

- Each physician, on the average produces $110,000 in gross annual revenues, which is the funding source for automation. This figure is basic to the market analysis in this study and was verified from two sources:

  - The American Medical Association.

  - Respondents in this study.

- An average physician supports 2.1 additional personnel. This figure is basic to this study and was verified from the same two sources.

- Market projections made in this study were derived as follows.

- Total number of physicians distributed by size of group are shown in Exhibit VI-1. Roughly the same number of physicans are contained in each group category (21,791 to 30,888) thus, roughly equal revenues. Consequently, equal market opportunities are present in each category. As will be shown later, the number of establishments in each category varies greatly (from 464 to 7,722) thus, presenting interesting alternatives for marketing strategies.

- Total gross revenues per MD in group practice are shown in Exhibit VI-2. On the average, each physican produced:

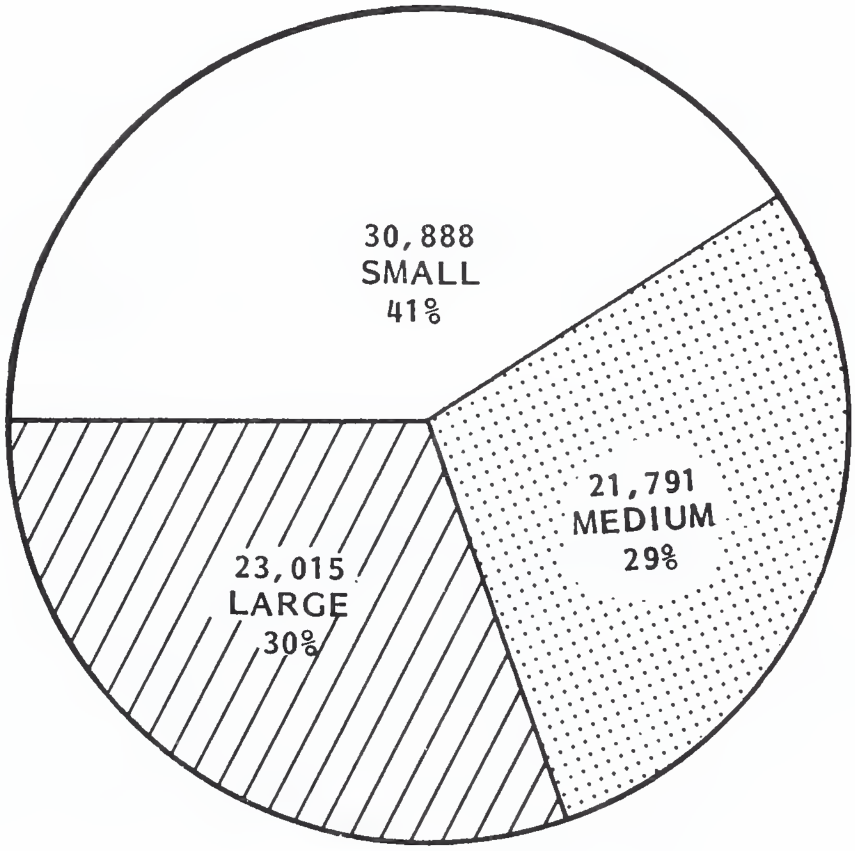
  - $113,000 per year as reported by respondents, or

  - $107,000 per year as reported by the American Medical Association.

  Of this amount $43,500 (41%) went for expenses. In this study a figure of $110,000 was used.

EXHIBIT VI-1

TOTAL NUMBER OF MDs IN GROUP PRACTICE
DISTRIBUTED BY SIZE OF GROUP



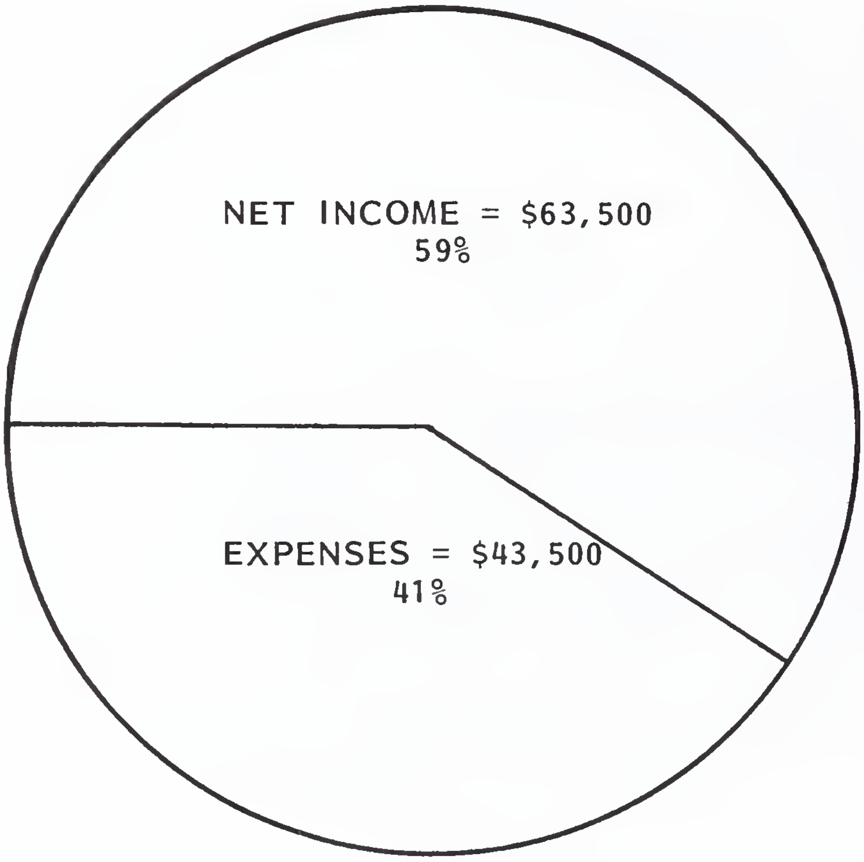
TOTAL MDs = 75,694

☐	3-6 MDs	SMALL
⛶ (dotted)	7-19 MDs	MEDIUM
▨ (hatched)	20 OR MORE MDs	LARGE

EXHIBIT VI-2

TOTAL GROSS REVENUES PER MD
IN GROUP PRACTICE

NATIONAL AVERAGE PER YEAR



*TOTAL GROSS REVENUE PER MD=
$107,000 PER YEAR

*SOURCE: AMERICAN MEDICAL ASSOC.
PROFILE OF MEDICAL
PRACTICES
1978 REVISED

TOTAL GROSS REVENUE PER MD -
AS DERIVED FROM THIS STUDY =
$113,000 PER YEAR

- The number of support personnel per physican is shown in Exhibit VI-3. On the average each physican supported:

  - 2.08 additional persons as reported by respondents, or

  - 2.1 additional persons as reported by the American Medical Association.

  The figure of 2.1 was used in this study.

- Expenses per support person average $20,714.

- Total gross revenues are:

  - (Total MDs) x $110,000.

- Revenues are shown distributed by size of group in Exhibit VI-4. They total $8.3 billion per year and are roughly equal for each size category.

- The potential EDP information processing market for the medical group practice industry is estimated to be 1.75% of gross revenues. This was arrived at by comparing the medical offices and clinics industry with the closely allied hospitals industry, previously researched by INPUT. The percent of gross revenues for the medical offices and clinics industry is estimated to be 40% larger (1.75%) than that of the hospital market. The total potential market distributed by size of group is shown in Exhibit VI-5. Market potential for computer equipment and services is:

  wrong - 14.5 (see p. 85)

  - $145 million per year in 1979.

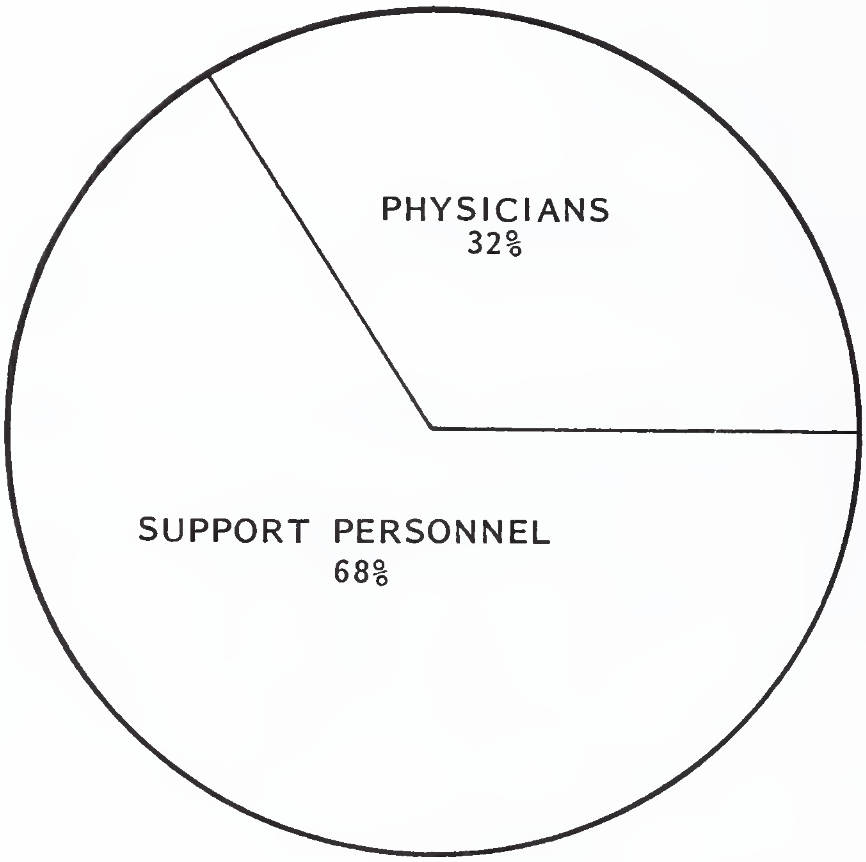
- Also shown in Exhibit VI-5 are the number of institutions in each category:

  - Small = 7,722 (76%).

  - Medium = 1,981 (19%).

EXHIBIT VI-3

NUMBER OF SUPPORT PERSONNEL PER MD
AS REPORTED BY RESPONDENTS



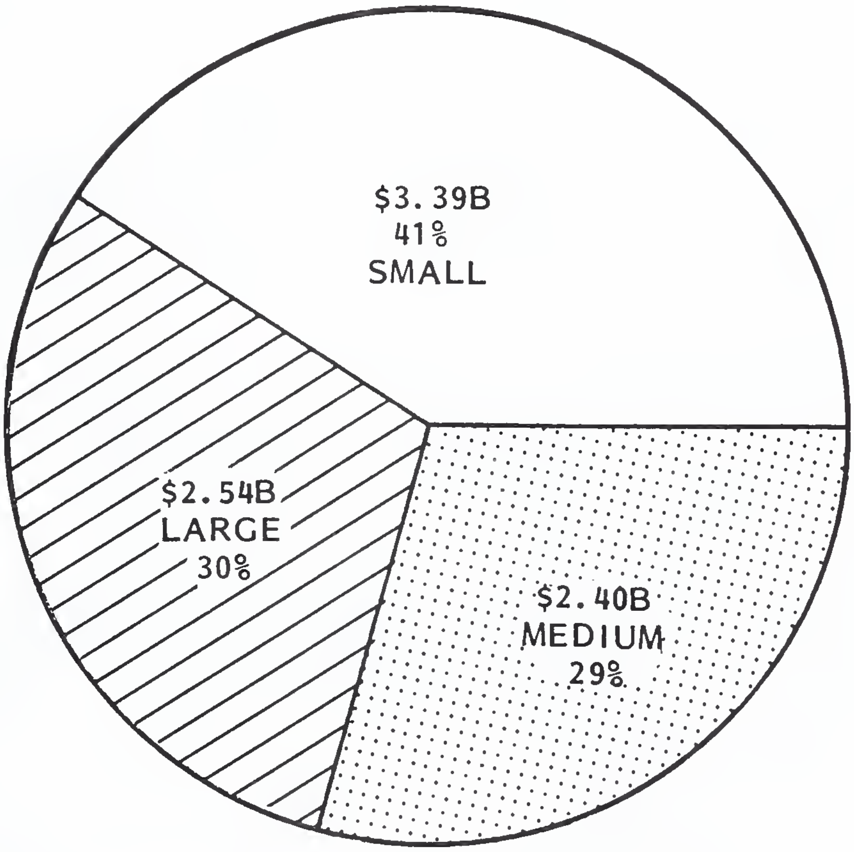
SUPPORT PERSONNEL
PER PHYSICIAN = 2.08
(FROM THIS STUDY)

SUPPORT PERSONNEL
PER PHYSICIAN -
NATIONAL AVERAGE = 2.1
(AS REPORTED BY THE A.M.A.)

EXHIBIT VI-4

TOTAL GROSS REVENUES FROM MEDICAL GROUP PRACTICES DISTRIBUTED BY SIZE OF GROUP

PER YEAR BILLIONS OF DOLLARS



TOTAL = $8.33 BILLION PER YEAR

3-6 MDs SMALL

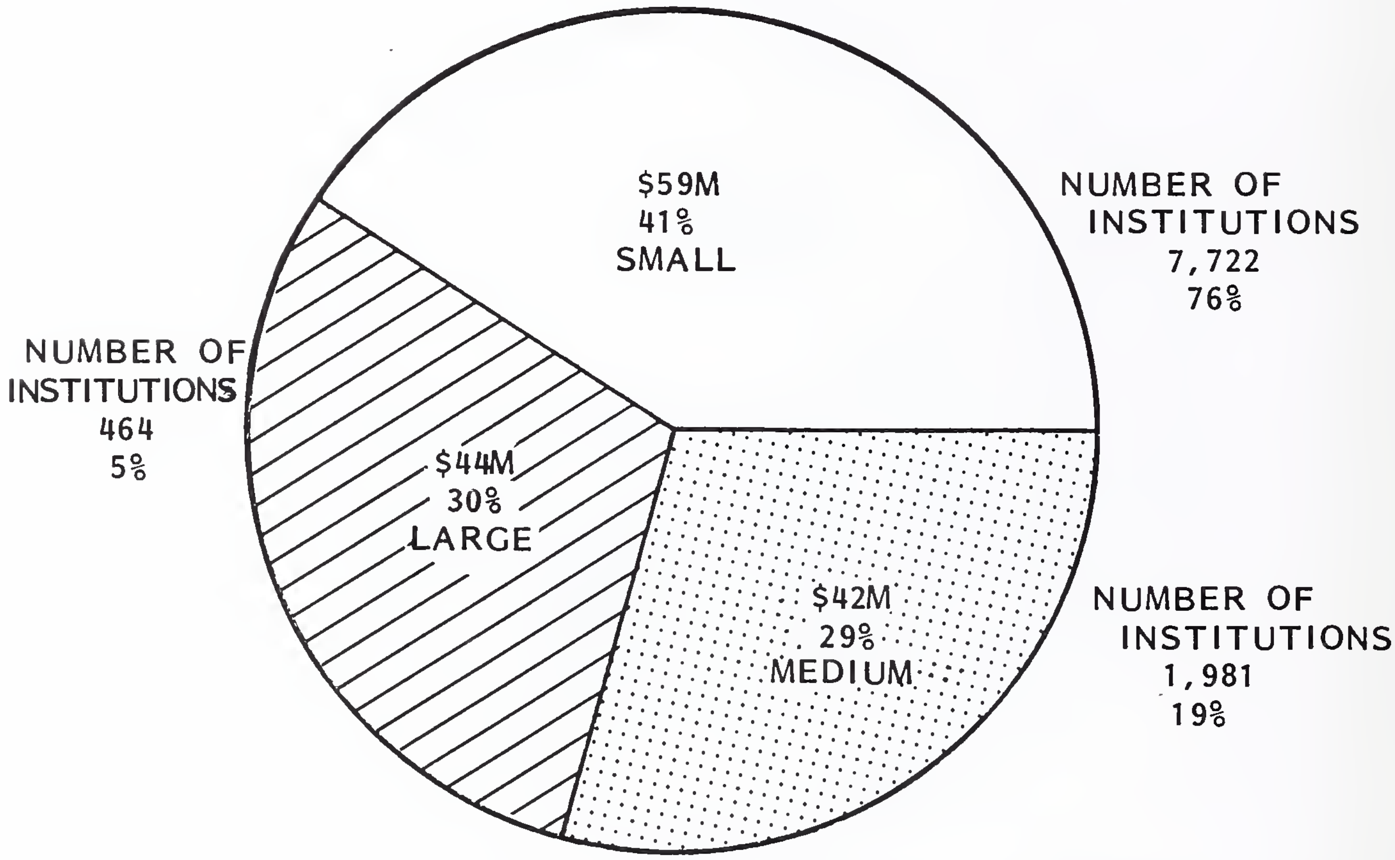
7-19 MDs MEDIUM

20 OR MORE MDs LARGE

EXHIBIT VI-5

POTENTIAL COMPUTER EQUIPMENT AND SERVICES

MARKET DISTRIBUTED BY SIZE OF GROUP - ANNUAL



TOTAL NUMBER OF INSTITUTIONS = 10,167

TOTAL $145 MILLION PER YEAR

PERCENT OF GROSS REVENUES = 1.75%

3-6 MDs SMALL

7-19 MDs MEDIUM

20 OR MORE MDs LARGE

- Large = 464 (5%).

- o It is of interest to note that groups of three to six MDs represent 41% of the potential market and 76% of the groups.

- o Groups of 20 or more MDs represent 30% of the potential market and less than 5% of the groups.

- o Vendors might well decide to concentrate on the larger, more sophisticated groups to minimize marketing expense and achieve economies of scale or with less product development to concentrate on the larger numbers of small groups.

- o As previously reported, INPUT estimates present market penetration for computer equipment and services to be 10% or less of total potential. (See Section V - Applications Analysis.)

- o INPUT estimates that the average annual growth rate for computer equipment and services will be about 1.5 times that for the computer equipment and services industry as a whole, reflecting the nature of an unpenetrated market.

- o The overall market estimates and growth projections for computer equipment and services in physicians' offices and clinics are shown in Exhibit VI-6. They are:

	1979	1983
Total	14.5 million	42.5 million

- o The estimated market for computer equipment and services for physicians offices and clinics per MD and per employee are shown in Exhibit VI-7.

2. OFFICE EQUIPMENT AND SERVICES

- o Based upon this study, medical group practices spend:

EXHIBIT VI-6

ESTIMATED MARKET FOR COMPUTER EQUIPMENT AND SERVICES FOR PHYSICIANS OFFICES AND CLINICS

MARKET	1979	1983
TOTAL	$14.5 MILLION	$42.5 MILLION
PERCENT PENETRATION	10%	29%

AVERAGE ESTIMATED ANNUALIZED GROWTH RATE = 24%

EXHIBIT VI-7

ESTIMATED MARKET FOR COMPUTER EQUIPMENT AND SERVICES FOR PHYSICIANS OFFICES AND CLINICS PER MD AND PER EMPLOYEE

YEAR	1979	1983
PER MD	193	562
PER EMPLOYEE	92	267

NUMBER OF MDs = 75,694
NUMBER OF EMPLOYEES = 158,957

- $12.8 million per year or

- $169 per year per MD.

for office automation equipment and services (see Exhibit VI-8).

- Expenditures for office automation equipment and services for medical offices and clinics are almost entirely for photocopy equipment (estimated at 90%). The market figures are based on the number of photocopies made per month by each establishment (see Exhibit IV-12) and currently prevailing rates for photocopy equipment.

- The market for office equipment and services in this industry will grow no faster than a limited expansion of the number of physicians and the inflation rate will allow. In fact, any expansion of the market is inhibited by the fact that computer equipment and services is taking over the printing of patient bills which reduces the photocopy volume.

  - Most of the copies made in a doctor's office are for insurance purposes, copies of records and, less frequently, billing. As more clinics employ data processing, the billing application as well as extra copies for insurance purposes are no longer necessary, and copy volume normally drops. This is one of the few areas in which a drop in copying can be assumed. The norm in almost all businesses is a steady increase in volume. Since the clinic applications are mainly applications that can be done better, faster and more accurately by computer, once a computer billing system is in place, providing complete, easy to read bills, with insurance copies automatically provided, copy volume will go down.

3. COMMUNICATIONS EQUIPMENT AND SERVICES

- Based on this study, medical group practices spend:

EXHIBIT VI-8

ESTIMATED MARKET FOR OFFICE AUTOMATION EQUIPMENT AND SERVICES FOR PHYSICIANS OFFICES AND CLINICS

DISTRIBUTION BY SIZE OF GROUP

SIZE OF GROUP	TOTAL $ IN MILLIONS	$ PER MD	$ PER PERSON
SMALL (3-6 MDs)	$5.3	$172	$55
MEDIUM (7-19 MDs)	5.3	243	78
LARGE (20 OR MORE MDs)	2.2	96	31
TOTAL	$12.8	$164	$53

- $56.8 million per year or,

- $756 per year per MD

for communications equipment and services.

- The communications needs of this industry are satisfied by telephone equipment which is almost always supplied by local telephone companies. However, 35% of the respondents reported that they would consider interconnect equipment (see Exhibit VII-5), which may indicate a growing market for interconnect equipment.

- The overall market for communications equipment and services in this industry will grow no faster than limited expansion of the number of physicians and the inflation rate will allow.

4. PROFILES OF SELECTED GROUPS

- Profiles are included for one group within each of the three categories interviewed (see Exhibits VI-9, 10, and 11). Each was selected as an example of a well automated group in their category. The groups vary in size from six to thirty MDs and in annual revenues of $750,000 to $3.3 million.

- Vendors should regard these profiles as a point of departure for further automation of groups already well along the way with automation, and as a model for groups installing automation for the first time.

- Trends that have been previously reported are evident in the profiles. These trends are:

  - Small groups have more in-house computer installations, both as a percent and in total numbers, than large groups do.

  - Large groups, use computer service companies at present.

EXHIBIT VI-9

PROFILE OF A SELECTED SMALL SIZED GROUP

OB/GYN MEDICAL GROUP

MULTI-PRACTITIONER OFFICE - 6 MDs
6 RNs
6 CLERICAL/ADMIN.
18 TOTAL

- 120 PATIENTS PER DAY
- $700,000 ANNUAL REVENUE
- 1,500 BILLS PER MONTHS
- SMALL N.C.R. BUSINESS COMPUTER

  INSTALLED IN-HOUSE - APPROXIMATE COST $25,000
- LOCAL DATA TERMINAL
- FUNCTIONS AUTOMATED
  - PATIENT BILLING
  - ACCOUNTS RECEIVABLE
  - GENERAL LEDGER
- PLAIN PAPER XEROX COPIER INSTALLED
- 20 TELCO KEYSETS - NO PABX
- LEARN OF VENDORS
  - THROUGH TRADE JOURNALS
  - SALESMEN

EXHIBIT VI-10

PROFILE OF A SELECTED MEDIUM SIZED GROUP

SHARON MEDICAL CLINIC

12	MDs
2	LAB TECHNICIANS
11	RNs
12	CLERICAL/ADMIN.
37	TOTAL

- $1,300,000 ANNUAL REVENUE
- 200 PATIENTS PER DAY
- 3,000 BILLS PER MONTH
- USES LOCAL COMPUTER SERVICE COMPANY
  - BATCH PROCESSING
- INSTALLED DATA TERMINAL
- SPENDS $21,000 PER YEAR ON DATA PROCESSING
- FUNCTIONS AUTOMATED
  - PAYROLL
  - PATIENT BILLING
  - ACCOUNTS RECEIVABLE
  - INSURANCE
- TWO MINOLTA PLAIN PAPER COPIERS
- 60 TELCO KEYSETS - TELCO PABX
- LEARN OF VENDORS THROUGH SALESMEN

EXHIBIT VI-11

PROFILE OF A SELECTED LARGE SIZED GROUP

<u>OAK MEDICAL GROUP</u>

30	MDs
5	LAB TECHNICIANS
30	RNs
35	CLERICAL/ADMIN.
100	TOTAL

- $3,300,000 ANNUAL REVENUE
- 320 PATIENTS PER DAY
- $26.50 AVERAGE CHARGE FOR FIRST PATIENT VISIT
- 7,500 PATIENT BILLS PER MONTH
- SERVICE COMPANY
  - REMOTE BATCH
  - ALSO INTERACTIVE TERMINAL
  - DATA TRANSMITTED BY TELEPHONE EQUIPMENT
- SPENDS $85,000 PER YEAR ON DATA PROCESSING
- FUNCTIONS AUTOMATED
  - PAYROLL
  - PATIENT BILLING
  - ACCOUNTS RECEIVABLE
  - ACCOUNTS PAYABLE
  - GENERAL LEDGER
  - INSURANCE
- INTEREST IN LABORATORY REPORTING
- TWO XEROX 7000 PLAIN PAPER COPIERS
- 100 TELCO KEYSETS - TELCO - PABX
- LEARN OF VENDORS THROUGH SALESMEN

- Large groups are more automated, both as a percent of the groups and as a percent of applications automated.

- Large groups are more prepared to move on to medical applications than small groups are.

- Data teminals are in general use.

- Gross revenues average $110,000 per physician in each size category.

  . Each MD supports 2.1 additonal personnel.

  . There are no word processing installations.

  . Communications needs are almost entirely met by telephone company equipment.

  . Photocopiers are used universally.

B. BASIS FOR BUDGETING

● Responses to questions concerning budgeting were very scattered with no discernable patterns. It is evident that rigorous budgeting for automation equipment is not generally used.

VII PURCHASE POINTS AND DECISION PROCESS

VII PURCHASE POINTS AND DECISION PROCESS

A. PREFERRED INFORMATION AND PROCUREMENT SOURCES

- Groups of all sizes rely on salesmen, backed up by references from associates and catalogs, for information about computer services and equipment (see Exhibit VII-1, 2, and 3). This is true even though large group respondents chose not to respond to any sources of information other than the salesmen.

  - Comments from respondents made it clear that they enjoyed a close relationship with sales representatives and relied upon them for information and service. The following is a typical comment from respondents:

    . "We call specific people at the computer vendor - they come to explain and recommend - a tight working arrangement."

- Small sized groups preferred to rely primarily on equipment distributors for office equipment, as shown in Exhibit VII-4.

- Medium and large sized groups said that they preferred to rely primarily on manufacturers stores for office equipment. However, since in general those stores do not exist yet, the respondents mean that they would like to deal directly with stores owned by a manufacturer, but they are now dealing with franchised dealers.

EXHIBIT VII-1

COMPUTER EQUIPMENT AND SERVICES
PREFERRED INFORMATION SOURCES AS REPORTED
BY RESPONDENTS

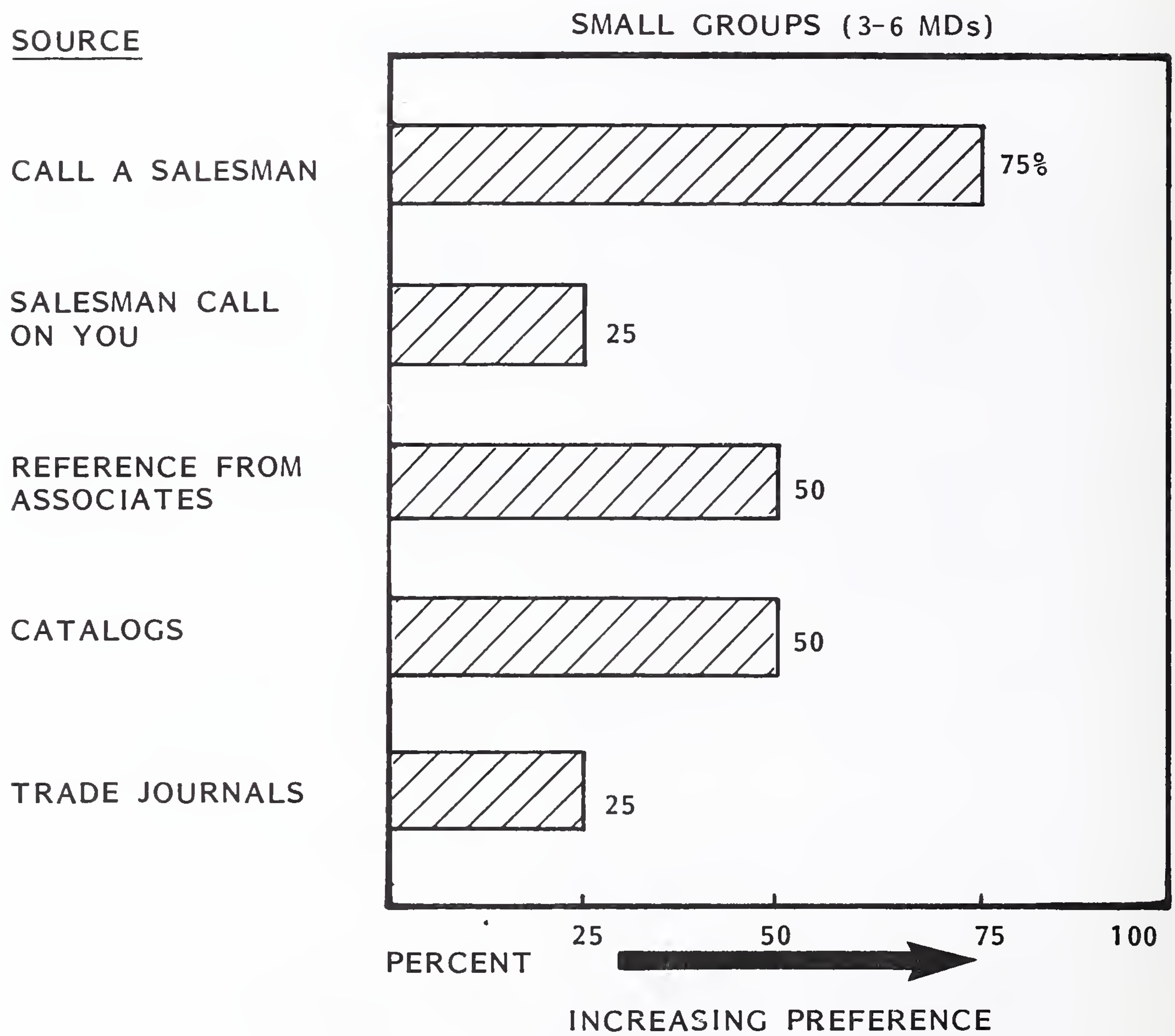


EXHIBIT VII-2

COMPUTER EQUIPMENT AND SERVICES
PREFERRED INFORMATION SOURCES AS
REPORTED BY RESPONDENTS

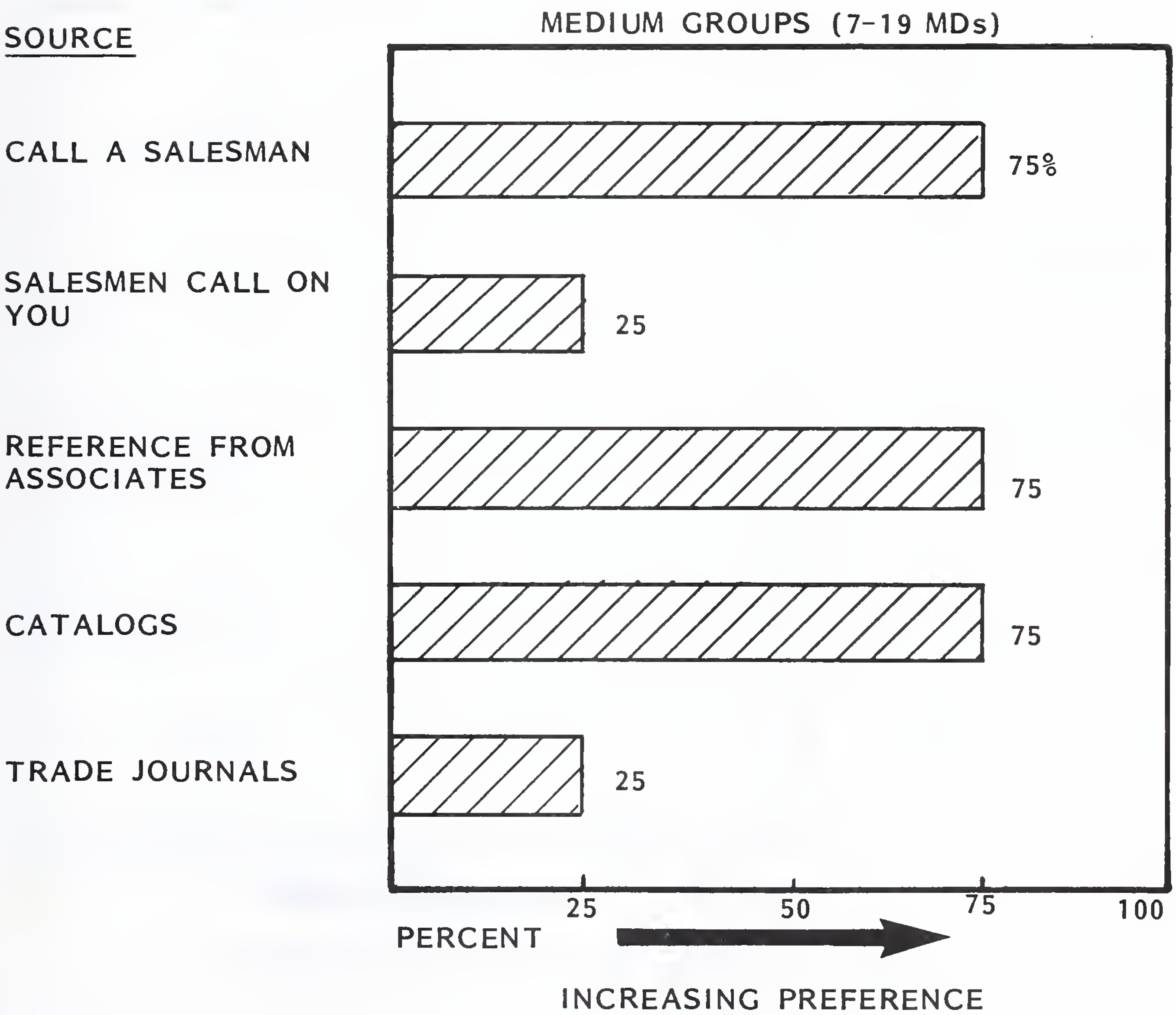


EXHIBIT VII-3

COMPUTER EQUIPMENT AND SERVICES
PREFERRED INFORMATION SOURCES AS REPORTED
BY RESPONDENTS

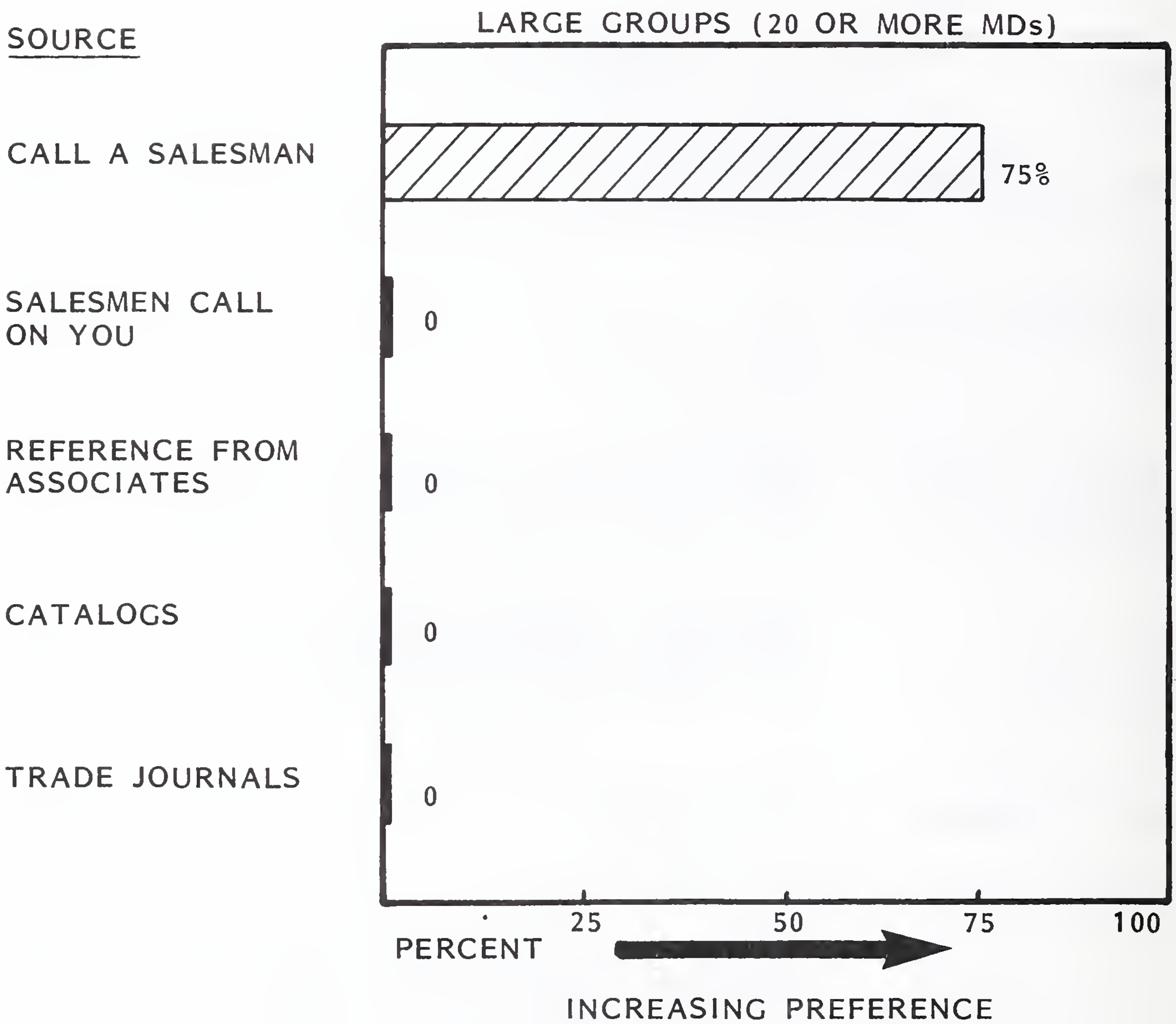


EXHIBIT VII-4

WHAT SOURCES OTHER THAN SALESMEN WOULD YOU CONSIDER CONTACTING FOR OFFICE EQUIPMENT? AS REPORTED BY RESPONDENTS

SOURCES	PERCENT			
	SMALL (3-6 MDs)	MEDIUM (7-19 MDs)	LARGE (20 OR MORE)	TOTAL
MANUFACTURERS STORES	8%	50%	50%	29%
OFFICE EQUIPMENT DISTRIBUTORS	58	13	25	38
OFFICE SUPPLIES DISTRIBUTORS	17	25	25	21
RETAIL STORES	17	12	-	12

NUMBER OF RESPONDENTS=24 (48%)

- All of the groups relied on reference from other associates. A typical comment by respondents is:

    - "Word of mouth gets around."

- For information concerning communications equipment and services, all groups presently prefer to rely on local telephone companies. This reconciles with the limited use of interconnect equipment as previously reported.

    - However, 50% of the respondents from medium and large sized groups stated that they would consider contacting manufacturers of interconnect equipment for communications equipment and services. This indicates a beginning interest in interconnect equipment. (See Exhibit VII-5.)

B. WHERE PURCHASE DECISIONS ARE MADE

- All of the medical groups and clinics contacted employed either an administrator or business manager. They are key to purchase decisions.

    - Physicians must also be involved in purchase decisions and in almost every instance will control the purchase but work closely with the administrator or business manager.

    - Certified public accountants employed by medical groups and clinics are also involved in purchase decisions of business applications of computer automation. CPAs are prime users of many of the computer prepared reports and are generally receptive toward automation. Use of such reports allows the CPA to improve their reporting and control capability. Since they have a key voice in purchase decisions they should be well informed on proposed automation.

EXHIBIT VII-5

WHAT EQUIPMENT SOURCES OTHER THAN LOCAL TELEPHONE COMPANY WOULD YOU CONSIDER CONTACTING FOR COMMUNICATIONS EQUIPMENT ? - AS REPORTED BY RESPONDENTS

SOURCES	PERCENT			
	SMALL (3-6 MDs)	MEDIUM (7-19 MDs)	LARGE (20 OR MORE)	TOTAL
LOCAL TELEPHONE COMPANY	90%	50%	50%	65%
INTERCONNECT	10	50	50	35

NUMBER OF RESPONDENTS=26(52%)

- Preference to acquire computer equipment (lease/purchase) is shown in Exhibit VII-6.

  - Groups are evenly split on this question. Fifty percent of respondents preferred to purchase equipment whenever they could for reasons of economy, whereas 50% preferred to lease or rent to conserve capital or for fear of equipment obsolescence.

- Eighty-five percent of all groups preferred to purchase office equipment, as shown in Exhibit VII-7.

- Ninety percent of all groups preferred to rent communications equipment, as shown in Exhibit VII-8.

- Typical comments from respondents concerning preferences as to how to acquire equipment or services are shown in Exhibit VII-9.

EXHIBIT VII-6

HOW DO YOU PREFER TO ACQUIRE COMPUTER EQUIPMENT?
AS REPORTED BY RESPONDENTS

METHOD	PERCENT			
	SMALL (3-6 MDs)	MEDIUM (7-19 MDs)	LARGE (20 OR MORE)	TOTAL
PURCHASE	57%	38%	50%	50%
LEASE	14	25	25	22
RENT	29	37	25	28

NUMBER OF RESPONDENTS=18(36%)

EXHIBIT VII-7

HOW DO YOU PREFER TO ACQUIRE OFFICE EQUIPMENT?
AS REPORTED BY RESPONDENTS

METHOD	PERCENT			
	SMALL (3-6 MDs)	MEDIUM (7-19 MDs)	LARGE (20 OR MORE)	TOTAL
PURCHASE	90%	89%	71%	85%
LEASE	10	-	15	8
RENT	-	11	14	7

NUMBER OF RESPONDENTS=26(52%)

IN

EXHIBIT VII-8

HOW DO YOU LIKE TO ACQUIRE COMMUNICATION EQUIPMENT?

AS REPORTED BY RESPONDENTS

METHOD	PERCENT			
	SMALL (3-6 MDs)	MEDIUM (7-19 MDs)	LARGE (20 OR MORE)	TOTAL
PURCHASE	-	22%	-	7%
LEASE	8	-	-	3
RENT	92	78	100	90

NUMBER OF RESPONDENTS=29(58%)

EXHIBIT VII-9

PREFERENCES AS TO HOW TO ACQUIRE EQUIPMENT OR SERVICES - TYPICAL COMMENTS FROM RESPONDENTS

SMALL OFFICES

- "PURCHASE SMALL COST ITEMS, LEASE EXPENSIVE EQUIPMENT"
- "FOR INEXPENSIVE EQUIPMENT, PURCHASE IS THE LEAST EXPENSIVE"
- "STANDARD, PAY THE PHONE BILL IS ADEQUATE"

MEDIUM OFFICES

- HAVE THE MONEY TO PURCHASE, THIS IS THE CHEAPEST WAY IN THE LONG RUN"
- "PURCHASE IS THE MOST ECONOMICAL"
- "STANDARD PHONE COMPANY ARRANGEMENT"

LARGE OFFICES

- "PREFER THE SERVICE" (COMPUTERS)
- "LEASE THE TERMINALS"
- "USUALLY PURCHASE-THOUGH THE PURCHASING DEPARTMENT ULTIMATELY DECIDES" (OFFICE EQUIPMENT)
- "PURCHASE IS BEST WHERE IT IS POSSIBLE" (COMPUTER)
- "LEASE - DO NOT WANT TO TIE UP CAPITAL IN EQUIPMENT THAT MAY BECOME OBSOLETE" (COMPUTER)

EXHIBIT VII-9 (CONT'D)

PREFERENCES AS TO HOW TO ACQUIRE EQUIPMENT OR SERVICES - TYPICAL COMMENTS FROM RESPONDENTS

- "PURCHASE TIES UP MONEY" (OFFICE)
- "PHONE COMPANY NORMAL PROCEDURES" (COMMUNICATION)
- "LOOKED AT OTHERS BUT TOO COSTLY" (COMMUNICATIONS)

APPENDIX A: REFERENCES

APPENDIX A: REFERENCES

Profile of Medical Practice, American Medical Association - 1978 Revised

Physician Distribution And Medical Licensure in the United States, American Medical Association - 1978

Medical Computing In The Small Clinic: Data Processing Alternatives And Their Economic Impact, American Medical Association, Department of Computer Systems in Medicine

County Business Patterns - U.S. Summary, U.S. Department of the Census, 1975

Rainbow Series - National Center For Health Statistics, Division Of Health, Education and Welfare, 1978

Standard Industrial Classification Manual, Office Of Management and Budget, 1972 Edition

Statistical Abstract of the United States, U.S. Department Of Commerce, Bureau of the Census, 1977

APPENDIX B: INTERVIEW PROGRAM FOR MEDICAL OFFICES AND CLINICS

APPENDIX B

INTERVIEW PROGRAM FOR THE MEDICAL OFFICES AND CLINICS INDUSTRY

SIZE OF MEDICAL OFFICE OR CLINIC	NUMBER OF TELEPHONE INTERVIEWS
SMALL (3-6 MDs)	34
MEDIUM (7-19 MDs)	9
LARGE (20 or MORE MDs)	7

NUMBER OF TELEPHONE VENDOR SURVEYS = 10

APPENDIX C: EXPENDITURE METHODOLOGY

APPENDIX C: EXPENDITURE METHODOLOGY

- The total expenditures of medical offices and clinics on computer equipment and services were obtained by:

  - Determining from reference sources listed in Appendix A the number of physicians in the United States who are currently engaged in patient care practicing in groups of three or more.

  - Determining from the research results of this study, and verifying against data published by the American Medical Association, the average annual gross revenue produced by each physician.

  - Annual gross revenue for the medical offices and clinics industry is then the product of the above two figures.

  - Estimating the percent of total gross annual revenues spent for computer equipment and services by medical offices and clinics by comparing this closely allied industry with the figures previously determined by INPUT in the hospital market. The above percentage when applied to gross annual revenues yields current annual expenditures for computer equipment and services.

  - Determining from this study, and verifying against data published by the American Medical Association, the average number of support personnel per physician. When multiplied by the total number of

physicians this yields the total number of persons employed by the medical offices and clinics industry.

- Projections were made by comparing the expected growth rate of this industry against previous INPUT estimates for expected growth in the total United States market for computer equipment and services.

- The total expenditures of medical offices and clinics on office automation were obtained by:

  - Determing from this study the current number of photocopies made monthly by this industry.

  - Applying current costs of photocopying equipment to the number of photocopies made per month to determine the current annual expenditures for photocopying.

  - Estimating that photocopying expense is 90% of the total expense for office automation.

- The total expenditures of medical offices and clinics for communications equipment and services were obtained by:

  - Determining from this study that voice telco equipment almost entirely meets the needs of this industry.

  - Determining from the research reuslts of this study the currently installed telephone systems.

  - Applying the total industrial revenues of the telephone companies to the medical sector as a ratio of the number of employees and the use of automation equipment (see the SES Annual Report 1978 Methodology Section).

APPENDIX D: QUESTIONNAIRE

CATALOG NO. S Q U K

MEDICAL PRACTITIONER SURVEY

Please indicate your name and address so we may send you a summary of the survey results:

Group Name ______________________________

Address ______________________________

____

____

Parent Company Name (if applicable) ______________________________

Respondent's Name ______________________________

Title ______________________________

Date ______________________________

Number of employees at this location: ____________

Total revenues for your company at this location:

- ☐ Under $200,000
- ☐ $200,000 to $500,000
- ☐ $500,000 to $1,000,000
- ☐ $1,000,000 to $2,500,000
- ☐ Over $2,500,000

INPUT
Park 80 Plaza West-1
Saddle Brook, NJ 07662
(201) 368-9471

MEDICAL PRACTITIONER SURVEY

We have been retained by a group of clients in the office products, computer, and communications industries to determine how they can better serve the needs of practitioners in the medical profession. We are especially interested in the factors that influence how you obtain office-related equipment and services. All information will be kept strictly confidential and used for statistical purposes only.

SECTION I: OFFICE REQUIREMENTS

1. How is your office organized?

☐ Individual practitioner office

☐ Multi-practitioner office

☐ Medical group or clinic

2. How many people work in your office?

Doctors	________
Lab Technicians	________
Nurses	________
Clerical/Administrative	________
TOTAL	________

3. How many patients are seen per day?

4. What specialties are practiced in your office?

☐ M.D. Limited to ________

☐ Dental and related specialties

☐ Chiropractic

☐ Optometric

☐ Psychologic

☐ Radiology

☐ Cardiology

☐ Internal Medicine

☐ I. E. N.& T.

☐ Laboratory

☐ Other (please specify) ________________

5. How much paperwork is processed:

	Weekly?	Monthly?	By Cycle?
☐ Bills	______	______	______
☐ Letters	______	______	______
☐ Records	______	______	______
☐ Insurance Forms	______	______	______
☐ Other Forms	______	______	______
☐ Other (please specify)	______	______	______

6. Compared to other offices, the amount of paperwork processed in this office is:

☐ Light

☐ Medium

☐ Heavy

7. What is the average charge for patient visit? $______________

8. What percentage of your work is done:

At home	______	%
In your main office	______	%
In other offices	______	%
In a local hospital	______	%
Traveling	______	%
TOTAL	100	%

9. Do you have an Office Manager or Administrator?

Yes	No	
☐	☐	Office Manager
☐	☐	Administrator

10. Please rate how useful the following types of office and computer equipment would be at the listed locations: (5 = very important; 1 = little importance)

TYPE OF EQUIPMENT	AT HOME	IN YOUR MAIN OFFICE	IN OTHER OFFICE	IN A LOCAL HOSPITAL	WHILE TRAVELING
PAGING SYSTEMS					
DICTATION EQUIPMENT					
MAILING EQUIPMENT					
TYPING EQUIPMENT					
CALCULATORS					
TERMINAL TO ACCESS YOUR RECORDS					
COMPUTERS					
COMPUTER SERVICES					
OTHER ________					

CATALOG NO. S Q U K

SECTION II: REQUIREMENTS FOR COMPUTER EQUIPMENT AND OFFICE AUTOMATION

1. What is the status of computer and office automation in your office?

   - [ ] I am using computer equipment only.
   - [ ] I am using office automation equipment only.
   - [ ] I am using both computer and office automtation equipment.
   - [ ] I will be using more automated equipment shortly.
   - [ ] I am thinking about using automated equipment.
   - [ ] Computer and office automated equipment are not needed for this office. Why?____

2. Do you think more automation will aid you?

   - [ ] Yes
   - [ ] No
   - [ ] Not sure
   - [ ] Some does, some doesn't

   Why?____

3. How much would you be willing to pay for accounts receivable?

   $__________ Processing, $__________ Terminals, $__________ Communications

4. What is your opinion of computer equipment and office automation?

   - [ ] I do not see how anyone gets along without it.
   - [ ] It is useful to larger offices only.
   - [ ] This kind of equipment is a help in any office.
   - [ ] It is expensive equipment that I don't need.
   - [ ] No opinion, not sure.

5. Who makes the decision regarding automation of your billing, accounts receivable, and etc? ____

6. Use of computers and office automation equipment:

a. What are the primary uses for computer equipment and services in your office?

____

____

b. What are the primary uses for office automation equipment in your office?

____

____

c. What are the primary uses for communications equipment and services in your office?

____

____

d. What do you expect to automate further within the next two years?

____

____

e. Within the next three to five years?

____

____

f. What, if anything, is preventing you from further automation immediately

____

____

CATALOG NO. S Q U K

SECTION III: USE OF COMPUTER EQUIPMENT AND SERVICES

1. Do you use computers now?

- [ ] Yes
- [ ] No

If no, skip to SECTION IV

2. Would you consider using outside services for any types of automation?

- [ ] Yes

Which functions? ______________________

- [ ] No

Why? ______________________

3. Who normally writes your computer programs?

- [ ] We use programs supplied by an equipment vendor.
- [ ] Programs are written by a software house.
- [ ] We write our own programs.
- [ ] Our computer service furnishes all programs.

4. Are they standard programs?

- [ ] Yes, we use them just as they were supplied by the computer vendor.
- [ ] Yes, but we purchased them separately from another source.
- [ ] Partly, they were modified by us to fit our situation.
- [ ] No, they were custom-designed and written for us by a software house.
- [ ] No, we prefer to write our own programs rather than modify standard programs.
- [ ] Standard programs are not useful here because we have special computer needs. What are these special computer needs?

____

____

5. How do you send and receive data? ______________________________

____

6. What is the best way for you to pay for computer time?

☐ Pay by the record (item).

☐ Pay by the minute.

☐ Pay a flat monthly rate.

☐ Other ______________________________

7. Where is your information stored?

☐ At your office.

☐ At a remote computer site.

☐ Both.

8. Installed equipment:

a.

Equipment	Company Make/Model	Number In Use	Approximate Cost
Accounting Machine			
Small Business Computer			
Large Computer			
Terminal			

8. b. Is the terminal:

☐ In an interactive mode (on-line).

☐ In a batch mode.

c. Is the terminal attached to a computer at:

☐ Your office

☐ Another office

☐ A computer service company

☐ A local bank

☐ Other (please specify) ______________________

9. Computer Services Used:

Name of Service Company	Type of Service Used	Applications

10. What equipment sources other than salesmen would you consider contacting for computer equipment?

- [ ] Manufacturer's stores
- [ ] Computer service distributor
- [ ] Office equipment distributor
- [ ] Computer hobby store
- [ ] Retail outlet

11. How do you prefer to acquire computer equipment?

- [ ] Rent
- [ ] Lease
  - [ ] Open End
  - [ ] Closed End
- [ ] Purchase

Why? ______________________________

____

CATALOG NO. SQUK

SECTION IV: APPLICATIONS PERFORMED AT YOUR LOCATION

(Please Check All That Apply)

APPLICATION	DONE MANUALLY	NOT DONE HERE/N.A.	DONE BY MAIL	AUTOMATED									IF NOT, WHY NOT
				NOW									
				OWN COMPUTER		TERMINAL ONLY		USE A SERVICE		OWN COMPUTER	TERMINAL ONLY	WILL USE A SERVICE	
				ON-LINE	BATCH	ON-LINE	BATCH	ON-LINE	BATCH				
ACCOUNTING AND FINANCE													
PAYROLL													
BILLING													
ACCOUNTS PAYABLE													
ACCOUNTS RECEIVABLE													
GENERAL LEDGER													
COST ACCOUNTING													
TAX ACCOUNTING													
FIXED ASSET ACCOUNTING													
BUDGET ADMINISTRATION													
OTHER ____________													
PERSONNEL													
PERSONNEL RECORDS													
TIME KEEPING													
OTHER ____________													
MEDICAL													
SCHEDULING													
DIETARY/MENU													
PATIENT BILLING													
AUTO. PATIENT RECORDS													
THIRD PARTY CLAIMS													
LABORATORY REPORTING													
CMPTR AIDED DIAGNOSIS													
SUPPLIES INVENTORY													
OTHER ____________													
OTHER COMMON APPLICATIONS													
MANAGEMENT WORKSTATION													
ENERGY CONTROL													
TEXT EDITING SOFTWARE													
ELECTRONIC MAIL													
OTHER ____________													

CATALOG NO. S Q U K

SECTION V: USE OF OFFICE EQUIPMENT

1. Installed office equipment:

TEXT EDITING	COMPANY MAKE/MODEL	NUMBER IN USE	AVERAGE NO. OF PAGES PER DAY
TYPEWRITERS			
STANDALONE WORD PROC.			
MULTI-STATION WORD PROC.			
COPIERS	**COMPANY MAKE/MODEL**	**NUMBER IN USE**	**AVERAGE NO. OF COPIES PER MONTH**
COATED PAPER COPIER			
PLAIN PAPER COPIER			
SUPPLEMENTARY PLAIN PAPER COPIER			
DUPLICATOR			
OTHER OFFICE EQUIPMENT	**COMPANY MAKE/MODEL**	**NUMBER IN USE**	**AVERAGE LEVEL OF USE**
DICTATION EQUIPMENT			
POSTAGE METERS			
ADDING MACHINES			
DESK TOP CALCULATORS			

2. Are you using any specialized software for word processing?

☐ Yes

☐ No

If yes, please indicate the name of the supplier and product name.

____

3. What sources, other than salesmen, would you consider contacting for office equipment?

- ☐ Manufacturer's stores
- ☐ Office equipment distributor
- ☐ Office supplies distributor
- ☐ Retail store
- ☐ Other ______________________________

4. How do you prefer to acquire office equipment?

- ☐ Rent
- ☐ Lease
  - ☐ Open End
  - ☐ Closed End
- ☐ Purchase

Why? ______________________________

SECTION VI: USE OF COMMUNICATIONS EQUIPMENT AND SERVICES

1. Communications equipment installed:

Type	Company Make/Model	Number In Use	Number Of Outside Lines
Keyset			
PABX			
Facsimile			
Other ________			

2. Communications services installed:

Type	Supplier	Number In Use	Restrictions (Band, Hrs., Mo., etc.)
WATS Lines			
TELEX/TWX			
Leased Lines			
Other Services ____________			

3. What equipment sources, other than the local telephone company, would you consider contacting for communications equipment?

- ☐ Manufacturer's stores
- ☐ Communications service company
- ☐ Office equipment distributor
- ☐ Retail outlet
- ☐ Other ____________________

4. How do you like to acquire communications equipment?

- ☐ Rent
- ☐ Lease
  - ☐ Open End
  - ☐ Closed End
- ☐ Purchase

Why? ____________________

____

SECTION VII: INFORMATION SOURCES USED TO SELECT VENDORS

1. How do you normally find out about what is available in computer and office automated equipment?

____

____

2. Please rate the usefulness of the following information sources: (1 = very useful, 5 = of little or no use)

INFORMATION SOURCE	RATING
Look at trade journals	
Look at catalogues	
Look in the yellow pages	
Call a salesman	
Talk to associates who have similar needs	
Salesmen call on you	
Call office services at headquarters	
If the purchasing department handles everything, please check this box.	☐

SECTION VIII: EXPENDITURES

1. How do you normally budget for administrative expenses?

   ☐ Percentage of revenues

   ☐ Last year's personnel and consumable costs plus an allowance for inflation

   ☐ Treat new office equipment as a non-budgeted capital investment and handle on an individual basis

   ☐ Budgets and expenditures are justified at headquarters

   ☐ Other ______________________________

2. How large an expense could you consider for improvements in any one year, assuming benefits justify the expenditures?

   ☐ Less than $100 per month
   ☐ $100 - $250 per month
   ☐ $251 - $500 per month
   ☐ $501 - $1,000 per month
   ☐ $1,000 - $2,000 per month
   ☐ $2,001 - $3,500 per month
   ☐ $3,501 - $5,000 per month
   ☐ More than $5,000 per month

3. How much is spent annually for communications? ______________

   Is it budgeted? ________ How is the budget determined? ________

   ____

4. How much is spent annually for data processing? ______________

   Is it budgeted? ________ How is the budget determined? ________

   ____

5. How much is spent annually for office equipment? ______________________

Is it budgeted? __________ How is the budget determined? ___________

____

6. How much is spent annually for office supplies? ______________________

Is it budgeted? __________ How is the budget determined? ___________

____

ALL INFORMATION IN THIS QUESTIONNAIRE WILL BE KEPT STRICTLY CONFIDENTIAL AND USED FOR STATISTICAL PURPOSES ONLY.

MEDICAL PRACTITIONER SURVEY

VENDOR QUESTIONNAIRE

VENDOR: Name ______________________

Address ______________________

____

Parent Company Name (if applicable) ______________________

Respondent's Name ______________________

Title ______________________

Date ______________________

1. Your Company's Sales

	TOTAL	TO MEDICAL PRACTITIONER'S	
	$	$	%
1973			
1977			
1978			
1983			

2. How many people in your firm work in this market area?

	1973	1978	1983
Sales			
Technical Support			
Clerical/Administrative			
Total			

3. How do you see the total market growing?

	Total Sales	
1973	1978	1983

4. What are the most significant trends in this marketplace?

____

____

5. Please list the major companies and their market share.

Competitor	Market Share		
	1973	1978	1983
1. ____________________	____	____	____
2. ____________________	____	____	____
3. ____________________	____	____	____
4. ____________________	____	____	____
5. ____________________	____	____	____
6. Your market share	____	____	____

6. Broadly, how do you plan to achieve your 1983 market share goals?

____

____

____

7. Is the market segmented? ☐ Yes ☐ No

8. If yes, what segments do you perceive?

1. ____________________
2. ____________________
3. ____________________
4. ____________________

9. What products or services do you supply to medical practitioner's offices?

	NAME/MODEL	H/P/S/ L/B/F*	SEGMENT (1,2,3,4 from Ques. 4)	SALES $	IS PRODUCT RENTED, LEASED OR SOLD
1.					
2.					
3.					
4.					
5.					
6.					

* Key: H = Hardware only
P = Software only
S = System (Hardware & Software)
L = On-Line Services
B = Remote Batch Services
F = Facilities Management

10. How do you distribute your products or services to medical offices? If the channels used vary by market segment, please so indicate in your response.

Distribution Channel	Product or Service A. ________	B. ________	C. ________	D. ________	E. ________
Direct Salesmen					
Own Store					
Office Equipment Distributor					
Office Supplies Distributor					
Retail Store					
Services Vendor					
Systems Vendor					
Other __________					

Please indicate the segments by 1, 2, 3 & 4 as defined in Question 4. Use E for every or all.

11. Who makes the decision to buy your product or service? If it varies by product, service or segment, please so indicate.

____

____

12. Is the sales cycle 30 days ____ 90 days ____ 120 days ____

or longer ____?

13. Listed below are EDP/medical application areas. In general, which are currently provided to medical practitioners and which will be available by 1983?

	How Provided (S/L/B/I)* 1978	1983
Accounting & Finance		
Payroll	____	____
Accounts Payable	____	____
Accounts Receivable	____	____
Patient Billing	____	____
General Ledger	____	____
Cost Accounting	____	____
Tax Accounting	____	____
Fixed Assets Accounting	____	____
Budget Administration	____	____
Other ____________	____	____
Personnel		
Personnel Records	____	____
Time Keeping	____	____
Other ____________	____	____

* Key: S = Provided for users own system
L = Provided on-line batch
B = Provided via remote batch
I - Provided in interactive mode

	How Provided (S/L/B/I)*	
	1978	1983
Medical		
Scheduling	____	____
Dietary Menu	____	____
Third Party Claims	____	____
Automated Patient Records	____	____
Laboratory Reporting	____	____
Computer Aided Diagnosis	____	____
Supplies Inventory	____	____
Other ______________________	____	____
Other Common Applications		
Energy Control	____	____
Text Editing Software	____	____
Other ______________________	____	____

* Key: S = Provided for users own system
L = Provided on-line batch
B = Provided via remote batch
I = Provided in interactive mode

14. Do you find that a successful initial sale in this market area leads to additional sales of:

1. the same product/service
2. add-ons to the initial product or service
3. other products or services

If this varies by product, service or market segment, please indicate.

____

____

15. What are the reasons customers buy your products or services?

____

____

____

16. Are tax incentives available in this marketplace?

____

____

17. Are there any unique problems in selling to this marketplace?

____

____

____

18. During the coming 5 years, how will the salability of products or services to medical practioners be affected by:

1. Anticipated legislation?

____

____

____

2. Anticipated economic changes?

____

____

____

INF

APPENDIX E: DEFINITIONS

APPENDIX E: DEFINITIONS

- A group medical practice (as defined by the American Medical Association) is:

  - Three or more physicians formally organized to provide medical services through the joint use of equipment and personnel.

  - A joint medical practice with income from the practice distributed in accordance with methods previously determined by members of the group.

- A small medical group contains from three to six physicians.

- A medium medical group contains from 7 to 19 physicians.

- A large medical group contains 20 or more physicians.

- Computer services are provided by vendors which perform data processing functions using vendor computers, who assist users to perform such functions on their own computers; included are remote computing services (RCS), batch services, facilities management, professional services, and software products.

- Computer equipment includes any locally installed terminal, minicomputer, or mainframe. For forecasting purpose only, the term is defined as locally installed general purpose minicomputer or mainfram; i.e., local processing intelligence -- not including desk top calculators or accounting machines.

- Communications equipment includes keyset or PABX. Communications automation is defined as interconnect, which is the attachment and use of non-telephone company equipment together with telephone company equipment or services.

- Communications services includes direct dial long distance (DDD), WATS, leased lines, tie lines, Telex/TWX, or other regulated transmission of voice or data.

- Office automation is defined as the use of word processing/text editing equipment, either single station or multi-station.

- Office equipment includes word processing, photocopiers, duplication machines and facsimile equipment.

- Industry specific EDP applications are defined as EDP qpplications which are important automatable functions of an industry or group of industries; e.g., interline payables (transportation) and bill of materials (discrete manufacturing).